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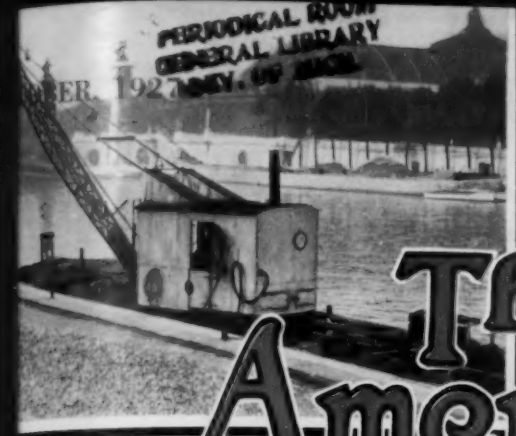
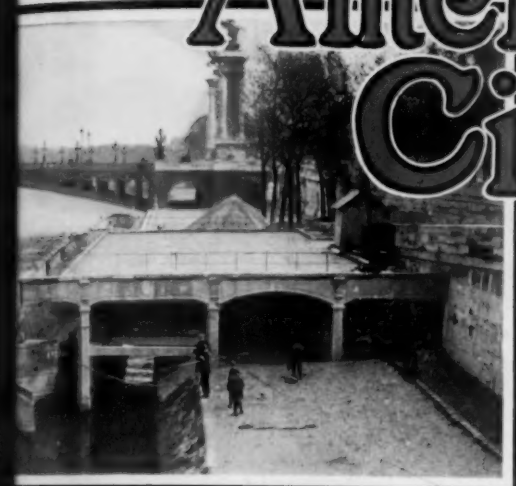
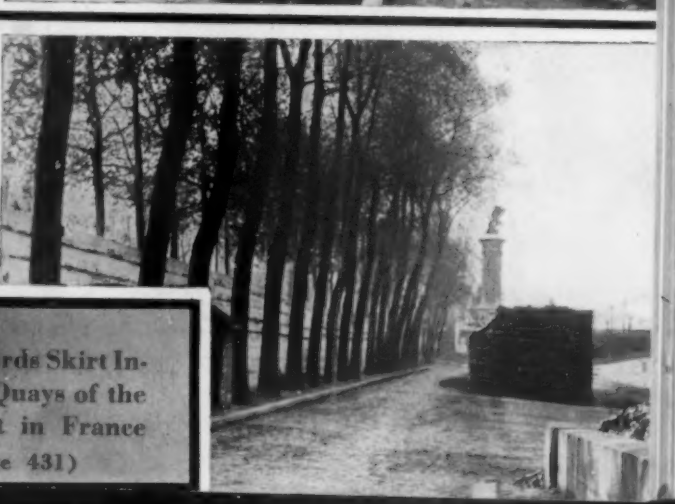
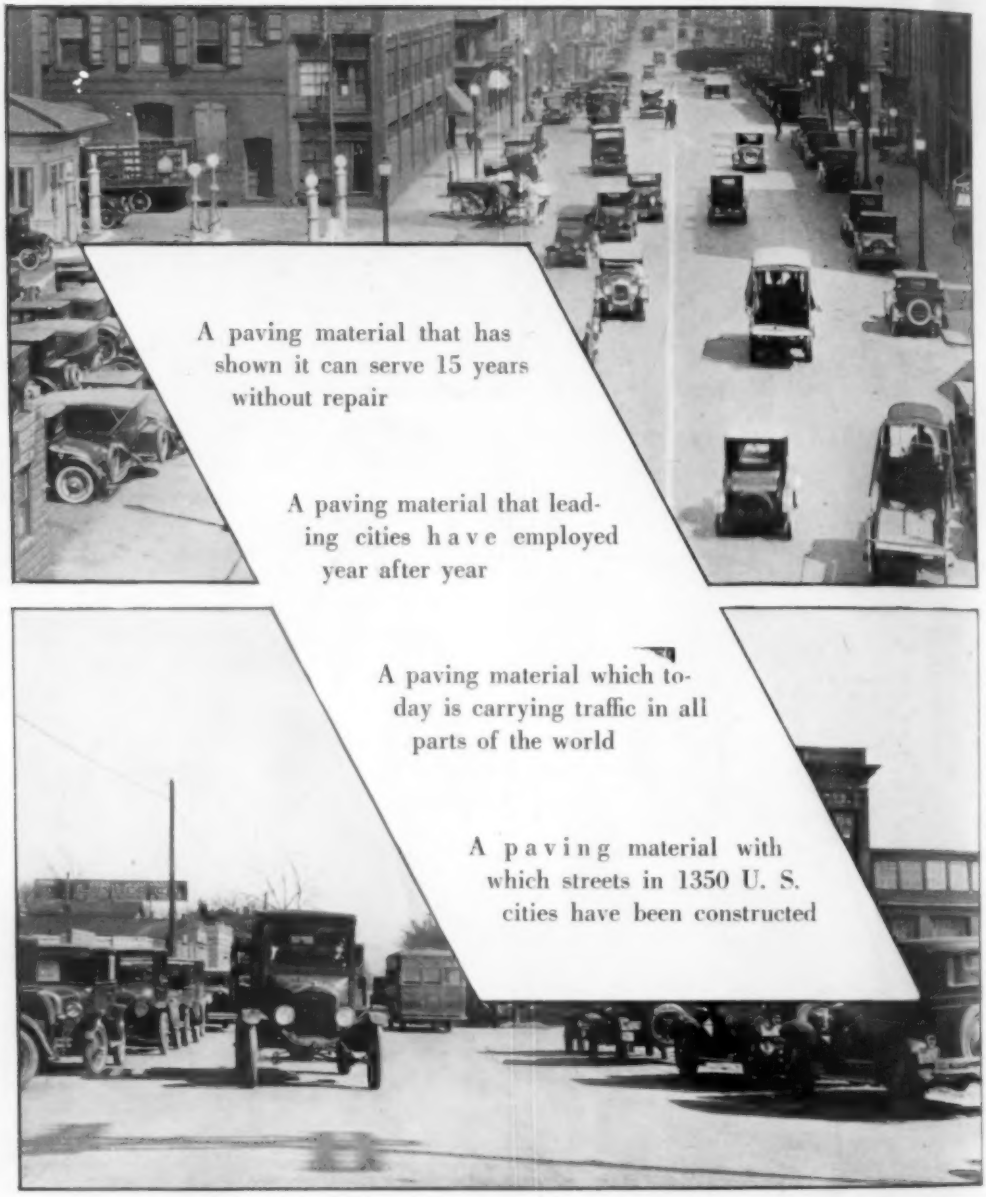






Paris Boulevards Skirt Inconspicuous Quays of the Greatest Port in France

(See page 431)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OCTOBER
1927

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Paris Boulevards Skirt Inconspicuous Quays of Greatest Port in France

By Roy S. MacElwee

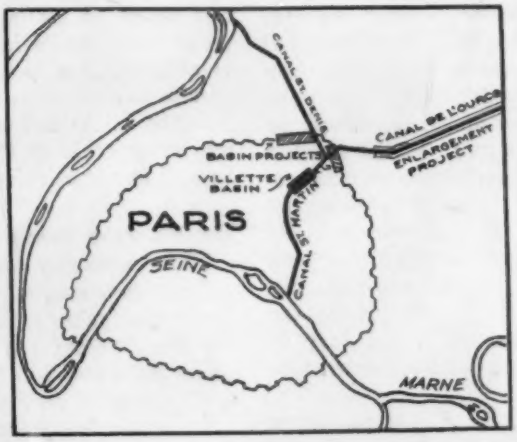
Commissioner of Port Development, Port of Charleston, S. C.

"YOU say Paris is France's greatest port? Where is it? I did not see any port when I was there last summer."

"Did you drive along the River Seine, past Notre Dame, the Louvre, the Conciergerie, the Grand Palais?"

"Certainly, but I did not see any port. Perhaps it is outside of Paris somewhere. All I saw was miles of parks and driveways with rows of beautiful trees."

"Well, you were driving along about half of the total 60 kilometers of quays at the Port of Paris that handled in 1913 15½ million metric tons of shipping and, in 1925, 13 million tons."



M. Paul de Rousier* says that the Port of Paris is composed of the following elements: (1) the Seine through Paris within the old fortifications, representing a length of 12 kilometers, or 24 kilometers of quays; (2) various branches of the river, of about 2 kilometers; (3) the Canal Saint-Martin, 4½ kilometers; (4) the Canal de l'Ourcq, 2 kilometers of quays.

The reason our friend did not see the port for the trees was because of the trees. All rivers are subject to periods of high water, and it is standard practice in nearly all European waterways to provide for a lower level and a higher level of paved river banks Throughout the heart of Paris, the lower banks, carefully developed with substantial quay walls and quays paved with cobbles (granite blocks or Belgian blocks), although flooded with occasional high water, are the busy merchandise quays of the Port of Paris.

The paved quay extends to approximately 150 to 200 feet of the water's edge, where it encounters a vertical wall of masonry varying from 10 to 40 feet high with a balustrade. The top of this embankment is the boulevard of parkway. First comes a wide sidewalk. Down by Notre Dame in the Latin Quarter this sidewalk is famous for the open-air bookstores that beguile students and visitors. The next item is at least one row of splendid shade trees, then the parkway, with one, two, three, or four drives (according to the circumstances), separated by rows of shade trees. At the far side are a final row of shade trees and sidewalks upon which the houses face.

This high-level boulevard with its trees and its parkways so completely captivates the eye of the visitor that he seldom notices the lower-level bank of the Seine devoted to commerce.

* Prof. Paul de Rousier, Secretary General of the Comité Central des Armateurs de France, in *Foreign Trade* of the American Chamber of Commerce in France.

The combination of river banks for both parkways and commerce is nowhere else more completely exemplified. Even while one is crossing the bridges, the eye leaps to the trees, parks, and monumental buildings on the opposite side and may completely overlook the lower level with its barges and cranes. One seldom notices, just before crossing the bridge, that at each end of it ramps lead down to the lower level of the quay bank on an easy grade.

The commerce of the River Seine is carried on by means of river barges, *chalandes*, of approximately 1,000 tons capacity, and smaller canal boats, *peniches*, of 250 to 300 tons. Firms such as power-houses and large factories patronize the barges because such firms are able to utilize thousand-ton shipments, while the great majority of small consumers, contractors, builders, stone masons, etc., prefer the *peniche*, as 250 to 300 tons of a commodity is about all that they use at one time. The high utility of the river-canal service of the Port of Paris is that these vessels in small units can deliver the materials comparatively close to the point of consumption at almost any spot along the 60 kilometers of quays.

The Seine embankment is such an attractive mooring that some dreamer visioned the idea of converting the *peniche* into a houseboat and tying it to a quay along the bank. The idea took hold, and private barges, barge houseboats, and club houseboats owned by individuals or clubs have become numerous. In the summer time, they are usually towed down to some delightful spot along the Seine, the Marne, or the Oise to serve as a floating country house for week-end visits of their owners or members and guests. This does not preclude their use for a restful retreat or jolly party during the winter months when tied up to the quay in Paris. Two or three have been converted into floating restaurants.

The local traffic of the busy little passenger vessels and local deliveries by water within the Port of Paris is not mentioned here because this traffic does not enter into the statistics and because most visitors to Paris have had a ride on these same steamers and are familiar with them.

Paris a Seaport?

Agitation bobs up from time to time for a 25-foot channel all the way from above Rouen, the present seaport of Paris. The expense would be enormous, not only for the deepening of the channel but for the changing of a large number of bridges across the river below Paris. But even with such a channel, transshipment below Paris would still be necessary in order to make delivery throughout the arterial barge waterways of the Paris district. Inasmuch as transshipment would be necessary in any case, it might just as well be made at Rouen; in fact, four-fifths of the commerce at Rouen, especially during the war, was transshipped in barges and canal boats for Paris.

The commerce of the Port of Paris in 1925 was three million tons outbound, and ten million tons inbound. It will be seen that this commerce serves the great consuming area of the Paris district. The first items are fuel—coal, and peat and petroleum products—and also building materials—stone, brick, sand, gravel. These bulk commodities are handled by various types of electric revolving cranes with grab-buckets, and large blocks of steel are handled by specially constructed heavy-duty bridge cranes. The second class of items of importance in the traffic of the Port of Paris are cereals in bags, flour in bags, fodder and straw in bales, potatoes in bags, etc. Wine in casks amounts to a total cargo of 231,678 tons. A large proportion of this wine comes from north Africa, from Algiers and Ovan. It would seem that this commodity should take the short route across the Mediterranean Sea to Marseilles and direct to Paris, but wine's time is not worth much while it is aging in casks and it is cheaper to ship by boat out through the Straits of Gibraltar, the Atlantic and up the Seine to Rouen and transship directly overside into river craft to Paris for "front-door delivery" at a convenient nearby quay.

The Waterway Connections of the Port of Paris

These waterway connections are:

From the north, (1) ocean shipping to Rouen for transshipping to barge, or for transport up the River Seine; (2) the River Oise and the Canal du Nord, which bring in coal and beet sugar from the northern provinces.

From the east, the River Marne and the Canal de la Marne au Rhin.

From the south, the River Seine as far as Montereau, thence the Yonne to Auxerre, thence the canal to Bourgogne, and from the south and center of France, the Canal du Loing, the Canal du Loire, and the Canal d'Orleans.

The Port Administration

The administration of the Seine traffic seems to have taken its tip from Caesar and is divided into three parts, much to the confusion of shipping in general and the investigator in particular:

1. The Prefecture de Police of the Department of the Seine fixes the rates for the use of the quays for unloading apparatus, etc.

QUAI DE LA CONFERENCE, FROM THE PONT DES INVALIDES, PARIS

The Grand Palais is behind the trees of the Cours la Reine. Note the cargo of peat on a barge, and the discharged gravel; also the péniche (canal boat) converted into a houseboat

2. The Service de la Navigation, a separate bureau, housed in a separate building on the left bank about 300 yards up the river from the Pont d'Iena, regulates the where, when, and how long of the barge at the quay.

3. The Direction des Domaines, 9 Rue de la Banque, collects all charges for the use of the quays.

The Service de la Navigation issues a book containing all regulations concerning inland navigation, the use of quays, etc., entitled "Guide Officiel de la Navigation Interieure, 1925," which may be purchased for 30 francs from the bookstore Berger-Lesrault, 136 Boulevard Saint Germain. At present the Director of this Bureau is Mr. Deval, and the Chef de Bureau is Mr. Boissonat, a most agreeable gentleman.

The Port Procedure

A firm wishing space for the discharge of cargo on the quay applies to the Prefecture de Police, which communicates with the Service de la Navigation, which recommends the berth at the quay to be allotted to this firm. The Prefecture de Police then notifies the firm of the space assigned to it, the period of time it can use the space, and the charges to be paid.

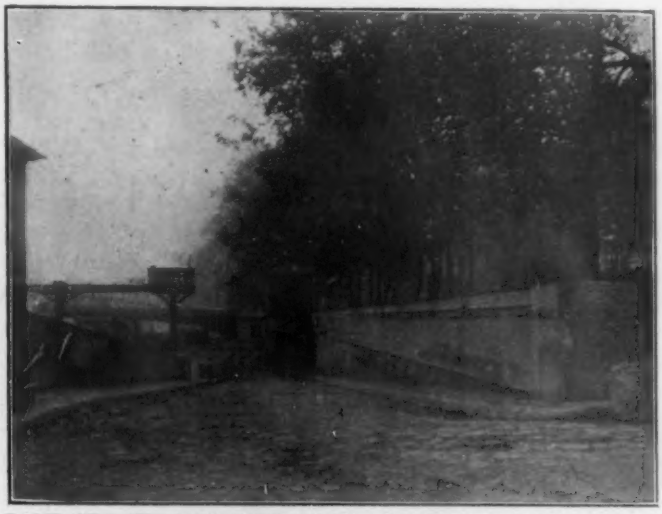
The firm pays for storage on the quay in cash or check made out to the Direction des Domaines. The rates are extremely low. There is no charge for goods that are not stored on the quay, but carted away from shipside.

There are charges, however, to be paid for the use of unloading-machinery to the owners of cranes and other equipment. These are usually privately owned.

So this is the Port of Paris! Not one tourist in a hundred knows it is there, even though he drives along it and across it many times every day that he is in Paris, and even in the early morning, but it handles more tonnage than any other port in France.

EDITORIAL NOTE.—The photographs on this page, and those on the front cover of this issue, were taken by the author while en route to the International Navigation Congress at Cairo, Egypt, as an official delegate of the United States, last December.

The first illustration on the cover is of a floating revolving crane for handling gravel, at the Quai d'Orsay. Below that is a view of a garbage dump at the same quay. In the third picture a *peniche* houseboat is viewed under the Alexander III bridge. At the bottom of the column are given details of the garbage dump. At the top of the right-hand column is another view, along the Quai d'Orsay, of the Alexander bridge. There follows a picture of the ramp leading from the Quai d'Orsay opposite the Chambre des Députés to the lower-level quay. Next is shown a heavy-duty crane for handling large granite and marble blocks. At the bottom is a view of the quays below the Quai d'Orsay, with cargoes of gravel and peat; one notes here the trees planted at the quay level to screen the quays from the boulevard.



RAMP LEADING FROM THE BOULEVARD QUAI D'ORSAY LEVEL TO THE QUAYS ON THE RIVER SEINE

Effective Regulation of Pedestrians

A Paper Presented at the National Safety Congress, in Chicago, September, 1927

By E. B. Lefferts

Manager, Public Safety Department, Automobile Club of Southern California, Los Angeles

THE subject assigned to me for discussion is one of the great problems confronting everyone interested in municipal traffic regulation. For many years this holding ot pedestrians for the "Go" signal, as has been practiced so universally with vehicular movement at heavily traveled intersections, has seemed to be practically impossible of attainment. To all who have observed the confusion as well as danger resulting from mixing these two classes of traffic, no argument is necessary to convince them of the desirability of definite and effective segregation.

This ideal of so controlling pedestrians that danger is minimized, and the maximum vehicular capacity of an intersection is obtained through uninterrupted flow of travel during the "Go" interval, has been realized in Los Angeles. I shall endeavor to outline the high lights as to how and why this has been possible. Aside from the apparent benefit of such control, engineers who have given serious study to this realize that it is a matter of life and death, because statistics show that 70 per cent of all traffic fatalities result from collisions between motor vehicles and pedestrians.

Our experience in Los Angeles is to me proof positive that pedestrian control is, like practically all other safety measures, a matter of education. This has been proved by the long and tortuous path this plan had to travel before it finally was enacted as a law. During a period of three years it was introduced three different times in our City Council and each time it was vetoed by the Mayor.

Naturally, each time it came before the Council it attracted a great deal of attention in the newspapers and was quite generally discussed on the street. Finally, sentiment had been developed in favor of this regulation to such extent that it was possible the third time to pass it over the veto of the Mayor. The third time, in addition to pedestrian regulation, the entire ordinance was revised and simplified. This gave a splendid opportunity to furnish articles regarding the provisions of the ordinance to all the daily papers, and they gave the necessary space because the interest and discussion aroused gave added news value to these regulations.

Simultaneous Broadcasting from All City Stations

The radio broadcasting stations also helped, and as a result of their cooperation we were able to have every station in the city broadcasting the same information regarding provisions of this new ordinance at eight o'clock each night during the week before the ordinance became effective. Each speaker was furnished with the same copy, consequently during this period if a person tuned out of one station and into another he would receive the same message. In other words, the radio audience had no escape from the informative talks on this regulation in our city.

During this same period the Automobile Club of Southern California, the police department, oil companies and similar agencies having direct contact with the public, printed and distributed over a quarter of a million copies or summaries of the ordinance. Therefore, when the ordinance became effective, there was no need to do other than remind our citizens of its provisions, because there was no valid excuse for ignorance.

This complete control of pedestrians and automobiles followed a series of experiments in dividing the right-of-way between the motor vehicle and the pedestrian. For a long time we have had on our statute books, like most other cities, a regulation compelling automobiles to stop behind standing street cars, which provides protection to pedestrians desiring to board and alight.

Next, primarily with the thought of protecting the school children of our city, white lines were drawn across streets where large numbers of children regularly crossed, and motorists were required to stop before crossing these lines. This experiment was not successful, as it compelled many motorists to come to a full stop during hours when there was no need for this precaution. As you all realize, any law to be observed must be reasonable. This was not a reasonable regulation, with the result that compliance was not obtained in the majority of instances unless a police officer was present.

Prolongation of Sidewalk Lines Across the Street

We finally decided upon our present regulation, which calls for the prolongation of the sidewalk lines across the street. These lines are divided in the center by another white line, making in effect an elongated letter "H" between the curbs with the cross-bar of the letter in the center of the street. A motorist is com-

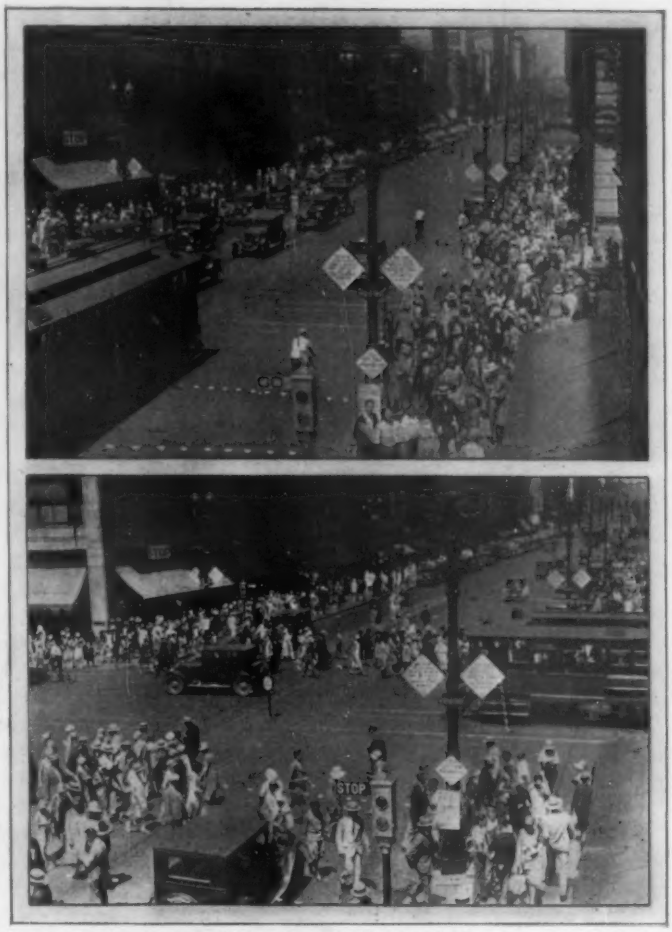
pelled to stop and remain standing while a pedestrian is in that half of the lane on the side of the street upon which the motorist is traveling, until the pedestrian has passed beyond the path of the vehicle.

Our next proposal was to separate pedestrian and vehicular traffic through the construction of pedestrian tunnels. A bond issue for $350,000 was submitted to the voters and passed with the largest majority of any issue submitted at that election, showing conclusively the interest taken by the public in this question of protecting child pedestrians.*

Locating the Pedestrian Tunnels

Upon passage of the bond issue we were confronted with an interesting problem of properly locating these tunnels. Naturally, every parent wanted a tunnel across the thoroughfare where his child would cross in going to and from school. Our original estimate showed that 35 tunnels could be built with this money, which naturally meant that some parents would be disappointed. It was therefore necessary to study in detail the proposed locations to determine which were the most dangerous crossings. I therefore undertook for the Automobile Club of Southern California a detailed traffic survey of all crossings in the vicinity of schools, which included traffic counts of vehicular and pedestrian movement at 150 of the most dangerous locations. Through the amassing of these data we were able to suggest to the constituted authorities tunnel locations which would give the maximum protection to the largest number of children.

After starting construction it was found that these tunnels could be built at a lower price than was originally estimated and, when this year's building program has been completed, we shall have over 40 tunnels in operation which have been financed entirely by our original bond issue of $350,000. In addition to providing protection for pedestrians, these tunnels greatly facilitate vehicular traffic movement by eliminating interruptions in its flow, as well as relieving police officers for duty elsewhere.



Photographs by courtesy of the Acme Traffic Signal Co.

PEDESTRIANS OBEY THE SIGNALS IN LOS ANGELES

These two photographs were taken at the intersection of Seventh Street and Broadway on August 18, 1927, at about 12.45 noon. In the upper view traffic is moving north and south, in the lower, east and west

In Los Angeles County alone there are 645,549 automobiles, or one to every two and a fraction persons, which of course means that the largest majority of our people either own or ride in automobiles, with the result that we have a population which is "motor-minded." Possibly this is another reason why the regulation of pedestrian travel has been so eminently successful in the city of Los Angeles, as it is not particularly difficult to sell to a motorist the idea that pedestrian regulation is a necessary adjunct to the expeditious and safe movement of traffic. It is a fact that the regulation of our pedestrians has expedited vehicular movement in our congested areas, and the vehicular capacity of intersections has been materially increased since pedestrian movement

*See THE AMERICAN CITY for January, 1926, page 81.

has been synchronized with vehicular movement.

The question of enforcement has always loomed large in everyone's mind whenever this regulation has been contemplated, and I know you will be interested in hearing how this phase of the problem was worked out in Los Angeles. To the best of my knowledge, but two arrests were made. These occurred soon after the regulation became effective, and it was generally accepted that the violators were simply publicity seekers.

The General Procedure in Enforcing the Regulation

The procedure in general is that when a person steps off the curb when the signal is against him, the police officer gives several sharp blasts of his whistle and beckons the absent-minded individual back to the curb. When this person turns and goes back to the sidewalk, he is facing a large gallery of amused people and he shamefacedly takes his place with the waiting group. Of course some persons are headstrong and refuse to be deterred by the officer's whistled warning. In such cases the officer simply escorts them back to the side of the street from whence they started. Arrests are not made except when persons become abusive and refuse to obey orders. We have found in both of these situations that the ridicule of their fellow citizens is far more effective than any other means which might be adopted to enforce the regulation.

We have in our city 371 mechanical traffic signals, of which 81 are in the downtown or central traffic district. We have given considerable thought to the time intervals at all intersections so controlled. The "platoon" or "wave" system is being used, which from the standpoint of the motorist causes the minimum amount of delay, but we have also given careful consideration to the pedestrian phase of the problem.

Importance of Short "Wait Periods"

There are sixteen different cycles in use in our downtown area. The "wait period," or that represented by the amber interval where the three-light signal is used, varies from six to nine seconds. In the early morning and late evening hours the intervals are short, while at noon and during the five o'clock peak hour the nine-second interval is used. The "Go" period for vehicles is never longer than 36 seconds, giving from 68 to 90 seconds for the complete cycle. I know that in some cities the "Go" interval has been set at as long as 180 seconds. There the pedestrian control is not effective. Try standing in one spot for three minutes some time when you are in a hurry, and you will see why 180-second intervals make it almost impossible to control pedestrians.

We have recognized that in controlling traffic we must take into consideration the study of human psychology, rather than approach it solely as an engineering problem. As American citizens we believe in fair play. The pedestrian does not resent being regulated when he realizes that he is getting a fifty-fifty break with the motorist, which is the case if he is not required to wait an unreasonable length of time on the corner and is given some protection when he happens to be in the center of the street when the signal change takes place.

In conclusion, I want to say that in the city of Los Angeles we do not have any different type of people than is found in any other community in this country. Our population is very cosmopolitan, having been drawn, as you know, from all over the United States. We find that even our visitors, after one or two false starts, fall into step and observe our regulations just as willingly as do the residents. I feel that this same regulation, with the consequent decrease in hazards to pedestrian traffic, can be effected in any community, provided the necessity for giving the pedestrian an even break with the motorist is recognized.

Validity of Sunday-Closing Ordinances

MAY a city council by ordinance prohibit stores and other business places from opening and transacting business on Sunday?

William J. Locke, City Attorney of Alameda and Executive Secretary of the League of California Municipalities, considers this question in an article of the above title in the August issue of *Pacific Municipalities*. He quotes the laws of California, reviews the legal decision of that state and of the United States Supreme Court, and citing other high legal authority on the subject, reaches this conclusion:

"By virtue of the authority herein referred to, it is my opinion that an ordinance of the city of Alameda forbidding the keeping open of stores generally on Sunday would be valid; and that such an ordinance would not be rendered unreasonable or void if it exempted drug stores or other places of business regarded by the council as ministering to the common necessities of the people."

Photograph by George H. Van Anda
FIRE-HOUSE AND TOWN HALL, LARCHMONT, N. Y.

Fire-Houses Need Not Be Eyesores

THE increasing attention given to the matter of making public buildings in cities pleasing from the standpoint of good architecture, finds expression in the treatment of fire-houses as well as of buildings of more general character or esthetic purpose, such as city halls, court-houses, auditoriums and memorials. Until recent years the fire-house has been greatly neglected architecturally, and has usually been a bare brick structure distinguished on the outside chiefly by wide doorways for apparatus, on the inside by gleaming poles for sliding to the ground floor, and otherwise notable for the occasional insistent clamor of the fire-gong.

Many fire-stations being in residential districts, they have gradually been affected by the improvement in style of domestic architecture. The bungalow type of station and others lending themselves to a variety of pleasing designs blending with a residential setting, are now to be found in many cities.

The Architectural Forum has devoted two recent numbers to public buildings; the one in June, besides treating of city halls, court-houses and capitols, contained illustrations of seventeen fire-department buildings of distinctive appearance, together with the plans for some of them. Photographs of five of these, for which and for some of the accompanying descriptive matter THE AMERICAN CITY is indebted to *The Architectural Forum*, are reproduced herewith, with the addition of fire-houses in Oakland, Calif., and White Plains, N. Y.

Fire-House and Municipal Building Combined —Larchmont, N. Y.

The village of Larchmont, N. Y., constructed a Municipal Building of striking appearance in 1922, at the corner of Larchmont Avenue and the Boston Post Road, which houses all departments, including fire and police. The photograph reproduced herewith shows the entrance to the apparatus room of the Fire Department and also the main hallway that leads to the administrative offices; it is the eastern elevation. The building is of brick trimmed with stone and has a variegated slate roof. Police headquarters are around to the right, on the north. The Chiefs of Fire and Police have offices on the ground floor, upon which there are also a large police room, a detention room, three cells for prisoners, washrooms, and lounge, workroom and storeroom for the Fire Department, adjoining the apparatus room.

The second floor includes a trustees' room, a fair-sized public meeting-room, several smaller rooms for club or office purposes, and a sleeping-room. There are also wash rooms, a kitchenette, and a vault. The architect was Frank A. Moore.

Fire-House and Auditorium Combined— Mamaroneck, N. Y.

An auditorium seating about 400 people occupies the second floor of a fire-house recently erected in Mamaroneck, N. Y., fronting on Weaver Street. As this station is served by a volunteer company, living-quarters that might otherwise be situated on this floor are dispensed with, excepting two bedrooms, placed in a wing. The building is done in

the early American style, and is distinguished by simplicity and dignity. It is built of local stone, with somewhat varying colors, and warm-toned mortar is used. The exterior woodwork, including a cupola or belfry, is painted a light cream. There is a copper roof with standing seams.

The basement contains the club-room for the volunteers, together with billiard-room and bowling-alley, and the heating plant for the building. The surrounding ground has been graded down to the basement windowsills, giving an outlook to the lawn. The first floor has the apparatus room, with the office, kitchen and firemen's reception rooms around it. The entrance for the auditorium is through a paneled hall at one side of the apparatus room, in one of the wings. A secondary entrance is through the other wing to the front of the building. The auditorium has a stage and dressing-room, and receives daylight through eleven large arched windows. Rest rooms for men and women are provided in the left wing. The architects for the building were Charles F. Mink and Otto R. Eggers.

A Fire-House on a Hillside—Oakland, Calif.

A new idea in fire-house construction has been put into execution in Oakland in a high-value residential district. The problem was to build an attractive fire-house on a side hill, or terraced lot, in such way as to improve the surrounding property and give the maximum of efficiency to the apparatus and comfort to the men. Dormitory and living quarters for a double company are placed in the building on the high end of the lot, approach being by a flight of steps following the contour of the land. The apparatus room is on a level with the street.

The building is unique, also, in that certain new types of building construction were applied. Generally speaking, the specifications are as follows: precast, reenforced frame, sides and roof, lined with Celotex cast with the slabs; roof made by painting waterproof plastic asbestos cement direct on to concrete; furnishings—standard wall beds and "Roll-about" bed for man on watch; electrically equipped.

The contract price, with extras, was $18,900. Grading, painting, paving and furnishings bring the total cost to $22,826, a rather high price because of necessary excavations and concrete retaining walls; it might vary according to location, cost of labor, etc.

The photograph gives a good general idea of the outside appearance of the house. The lot will be landscaped and beautified.

FRANK COLBOURN,
Commissioner of Public Works.

A FIRE-HOUSE ON A SIDE HILL, OAKLAND, CALIF.

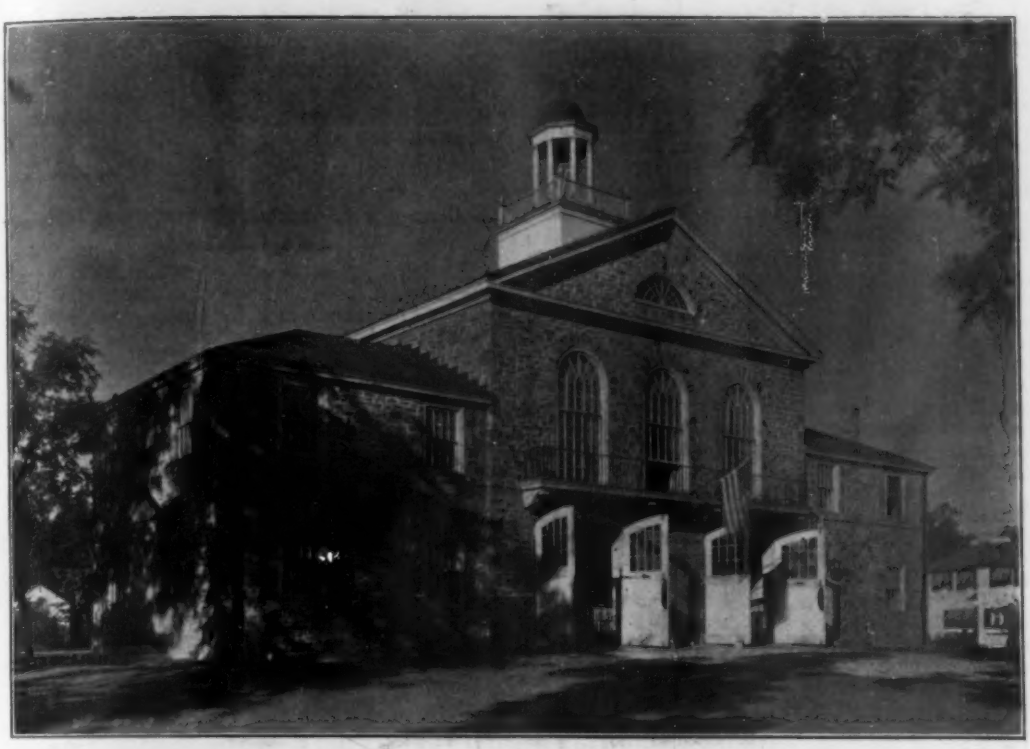
Photograph by Drix Duryea

VERMILYEA AVENUE FIRE-STATION, NEW YORK

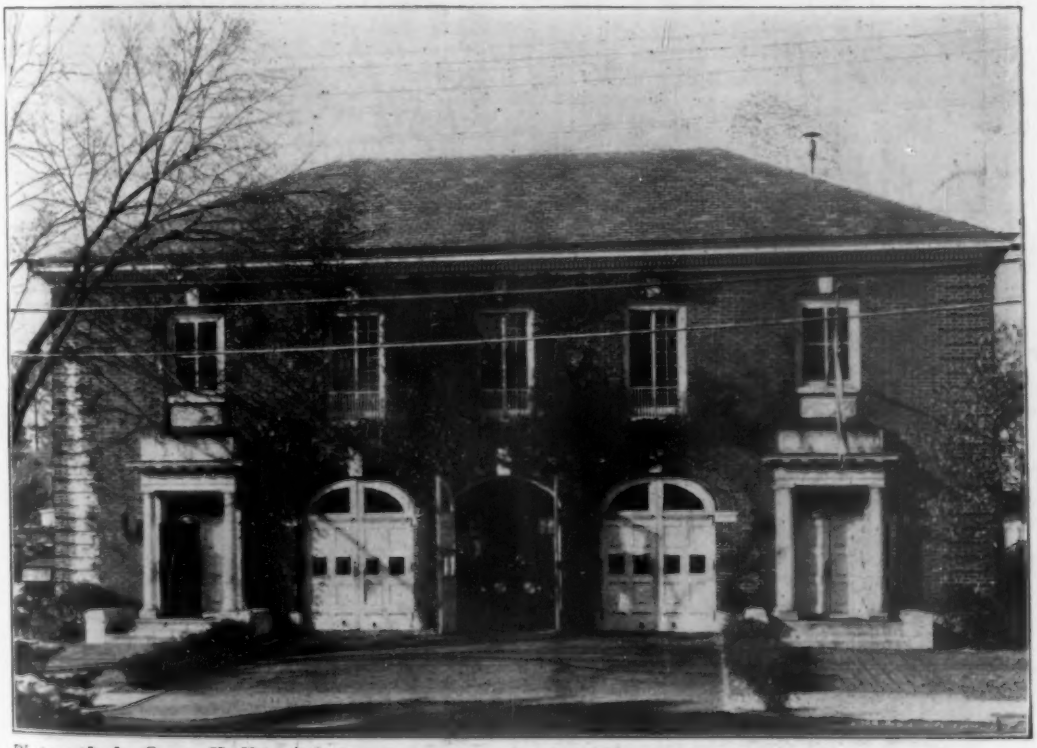
A Metropolitan Fire-Station in a Small Space—Vermilyea Avenue, New York

Occupying a ground area of slightly over 40 by 80 feet, on a 50-foot lot, the Vermilyea Avenue station of the New York Fire Department, in the northern part of Manhattan Island, is built in three stories. The apparatus room occupies the entire ground floor. The second floor contains the offices, with separate rooms for captain and lieutenant; about two-thirds of the floor space is given over to the dormitory and wash-room facilities for the men. The third floor, which is about 18 feet shorter than the others, is entirely devoted to a recreation room for the firemen. Several poles are provided for quick descent to the apparatus room.

The building is of brick and stone, of simple and dignified design relieved by several pleasing details as to the doorways, windows and cornice. As no planting of trees, shrubbery or grass was possible, a vine has been trained across the face of the building. This station houses Engine Company 95 and Hook and Ladder Company 36. The architects were Dennison & Hirons.



FIRE-STATION AND AUDITORIUM, MAMARONECK, N. Y.



Photographs by George H. Van Anda

FIRE-STATION AND POLICE HEADQUARTERS AT MILLBURN, N. J.

Fire, Police, and Township Headquarters Combined—Millburn, N. J.

For several years the township of Millburn, N. J., has been using a very attractive building designed by Horatio W. Olcott, architect, as a combined headquarters for the Police and Fire Departments and the township offices. It is a two-story structure of reddish brick, of colonial type of design. Three sets of double doors from the middle of the street side of the building form the entrance to the apparatus room of the Fire Department. Here are accommodated two 1,000-gallon pumpers, one hook and ladder truck, and one combined chemical and hose truck. The Chief's car is also housed here. The first floor contains in addition the Chief's office, the repair shop, the battery room, a dormitory with six beds, and washrooms with showers, a motor room containing an air-compressor for operating the fire-whistle, and another compressor for the tire pump. The Fire Department includes the Chief, Deputy Chief, 6 paid firemen and 36 volunteers.

On the first floor of the building are also Police Headquarters, the Police Chief's office, the Recorder's Court, and five cells. The second floor contains an assembly room and the offices of the members of the Township Committee, the Clerk, the Collector of Taxes, the Assessor, the Building Inspector, Supervisor of Public Works, Township Engineer, and Board of Health. There are also two vaults on this floor, besides a recreation room for the firemen, with a kitchen and other conveniences. In the basement are a central steam heating plant, hot water heater, storage space, and washroom, and lockers for the Police Department. Millburn is thus well provided with a headquarters building wherein are centralized its chief municipal activities.

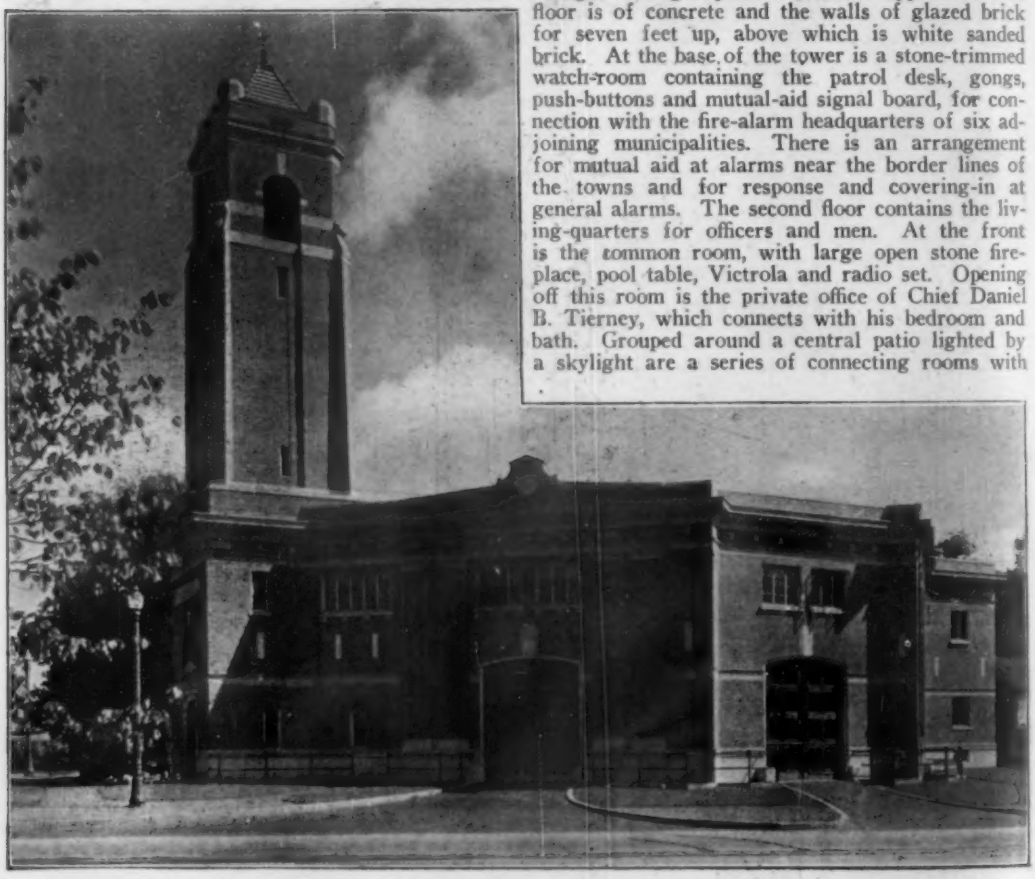
JAMES PENNOYER,
Fire Commissioner.

A Central Fire Station of Octagonal Shape—Arlington, Mass.

An imposing brick structure situated in a triangular plot in Arlington Center, the central fire-station in this city, as described in *Fire Engineering* shortly after its completion in the spring of last year, presents some unusual ideas in fire-house design. For example, there are six large double doors on the apparatus floor so that the machines can be driven in from any side, requiring no backing up when entering the building.

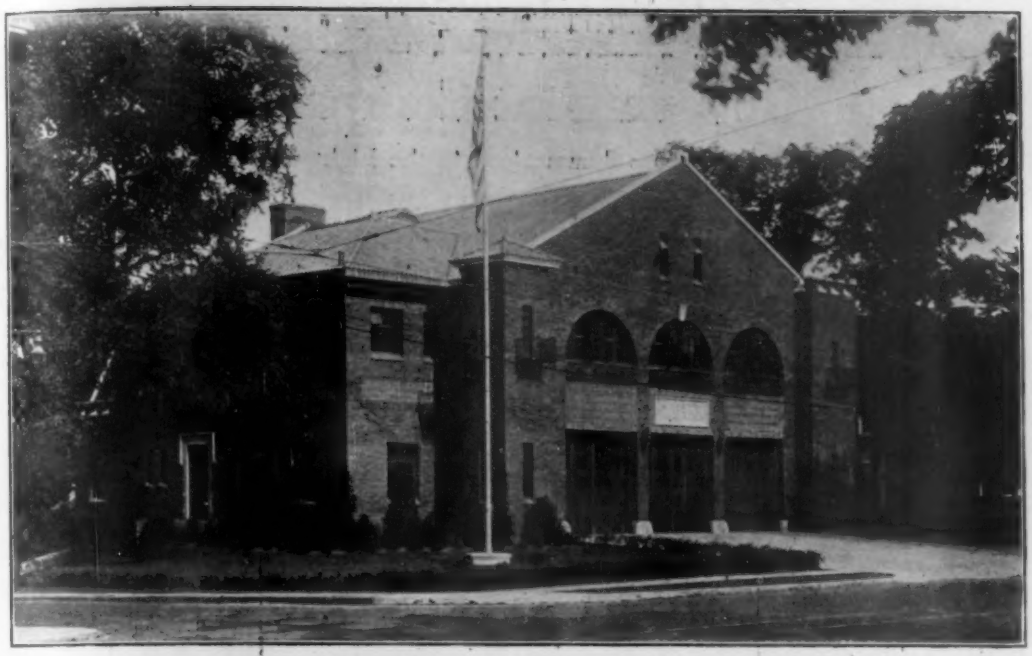
The station is two stories high, with an 83-foot tower, and is built of steel and concrete with a brick exterior trimmed with stone. The basement, with an inclined entrance, accommodates the wire division, the repair shop and the heating-plant, and just outside it are two rooms utilized as convenience stations, one for men and one for women, with direct access from the street.

The apparatus floor is a large open space without pillars or other encumbrances, and is large enough for eight pieces of motor apparatus. The floor is of concrete and the walls of glazed brick for seven feet up, above which is white sanded brick. At the base of the tower is a stone-trimmed watch-room containing the patrol desk, gongs, push-buttons and mutual-aid signal board, for connection with the fire-alarm headquarters of six adjoining municipalities. There is an arrangement for mutual aid at alarms near the border lines of the towns and for response and covering-in at general alarms. The second floor contains the living-quarters for officers and men. At the front is the common room, with large open stone fireplace, pool table, Victrola and radio set. Opening off this room is the private office of Chief Daniel B. Tierney, which connects with his bedroom and bath. Grouped around a central patio lighted by a skylight are a series of connecting rooms with



Photograph by Paul J. Weber

THE OCTAGONAL CENTRAL FIRE-STATION, ARLINGTON, MASS.



FIRE DEPARTMENT HEADQUARTERS AT WHITE PLAINS, N. Y.

two or three beds each. Separate rooms are provided for the officers and for two men of the wire division. Shower-baths, toilets and adequate lockers are included in the general arrangements. In the patio are sink, ice-box, small gas range, bubbler drinking fountain, seats and benches. The tower contains space for drying hose, a compressed-air siren and a bell.

On one side of the main structure and connecting with it through fire-resisting doors is a separate section for the fire-alarm equipment. The battery room is on the first floor; above is the room containing the signal equipment, also the office and the bedroom of the Superintendent of Fire Alarms, William Mason. The cost of the building was $152,000, exclusive of $46,000 for land. The architect was George Ernest Robinson.

Headquarters Fire-House in a Residential District—White Plains, N. Y.

The Fire Department in this city being in a transitory stage at the time that a new main fire-house was called for, the problem confronting the officials and the architect, Randell Henderson, of White Plains, was to house the department headquarters and accommodate two companies of active volunteers. The Department would eventually consist of paid men only, so that most of the space given to the volunteers would in time be turned over to the paid Department.

The building is a rectangle 60 x 80 feet with an attached wing 16 x 62 feet. The exterior treatment is black brick relieved by natural cement joints and terra cotta trim, with a mottled green tile roof. Fireproof construction is used entirely: brick walls, reinforced concrete floors, roof supported by gypsum bar and steel construction. The building has three floors and basement, with all lavatories having tile walls to ceilings, and connecting hallways with a colored tile wainscot.

The basement of the building is planned for the perpetual use of the volunteers. Each company receives a lounge room 28 x 34 feet, with walls of imitation travertine, and tile fireplace. The floors, as throughout the building, with the exception of the apparatus floor, are composition. The basement is provided with a dining-room and a kitchen, to be used by the Department as a whole. The necessary lavatory and showers for the volunteers are included in the basement. A boiler-room with vapor vacuum heating-plant, oil burner and clothes drier completes the basement layout.

The main portion of the first floor is used for housing the apparatus and has a clear span of 57 x 77 feet. The wing on this floor is divided into rest room, desk room, entrance hall, machine room and lavatory. Opening off the apparatus floor are closets for oils, gasoline, acids, etc. The sliding-poles are inclosed in towers on both sides of the apparatus room, leaving it unencumbered. The apparatus floor is of paving brick on a sand cushion. The walls of the entire first floor, excepting the entrance hall, are of salt-glazed brick.

The second floor consists mainly of sleeping-quarters. The Fire Chief and Captain each have a bedroom and bath. In addition, the Chief has a business office. Across the front of the building is located the dormitory, 27 x 52 feet, connected to the locker-room and lavatory. Across the rear of the building the volunteers have a reception room with an open fireplace. This space will be used later as an additional dormitory.

The third floor is given over entirely to the fire-alarm system, including switchboard room, battery room and generator room, besides living-quarters for the operator of the system.

The building cost about $155,000. It is located on a corner plot in a residential section, which necessitated a design and setback to conform with existing residences. Consequently, the building is situated in the center of a grass plot landscaped with old trees and shrubs.

FREDERICK C. McLAUGHLIN, Mayor.

English and American Systems of City Government Compared

With Recommendations Summarized in the Light of This Analysis

By Ernest S. Griffith, D. Phil. (Oxon.)

ESSENTIALLY, a city government is an institution for the performance of certain functions. To the extent that the city government is under the control of its citizens, the performance of these functions gives training in the exercise of political power. A machinery to perform the functions, and a source of revenue to finance them, are corollaries of the functions themselves. In a self-contained city-state the functions, framework, and finance would be wholly subject to local determinations; but in the cities of the present day the control of each of these three is shared by the central government. This introduces a fourth problem — the problem of distribution of control between local, intermediate, and central authorities. To these must be added the more descriptive problem of the quality of administration and the underlying problem of public opinion. These six constitute the elements of city government. How has each country combined and related them? Are there evidences of a system?

The Cities of England and America Have Much to Learn from One Another

The author of this comparison of factors which have dominated municipal development in England and America, is Warden of the University Settlement, Liverpool; Hon. Lecturer, Liverpool University; and sometime Preceptor in Economics, Princeton University.

The analysis here published and the recommendations based thereon comprise the major part of the concluding chapter of Mr. Griffith's new two-volume work, "The Modern Development of City Government in the United Kingdom and the United States." For permission to reprint this material The American City is indebted to the Oxford University Press of London and New York. The treatise was reviewed briefly in this magazine for August, page 259. It traces the development of city government in England and America, analyzes its bearing upon pending problems and indicates a few of the more important factors in public opinion which have reacted upon the character of city administration.

The English System Analyzed

The fundamental facts in the development of English cities appear to be the absence of a land tax and the presence of sharply drawn distinctions. The economic basis of the city revenue is thus essentially unsound. This has resulted in great financial stringency, and in the "ratepayer's psychology"—which together have stunted any functions not benefiting rateable property. With this fact in mind, central aid appears in the light of a palliative for the unsoundness of the revenue system. Central stimulus or supervision becomes an attempt to counteract the narrowing tendencies which the financial exigencies force upon the ratepayer. It has been shown that this is self-defeating.

The results of the class system divide themselves into two main groups. The first group has arisen out of the tradition of a governing class. This has become more than tolerable, owing to the spirit of public service which has accompanied it. Out of the respect for the law-giver has come the respect for the law itself. The other group has been less reassuring. If one class is to govern for all, and if caste is to be rigid, then education becomes an affair of status. Social and economic privileges are the rightful prerogatives of the classes that possess them, and any attack upon these privileges is likely to be called "confiscation." Privilege may be mitigated, but not removed. The evils of poverty, bad housing, disease, ignorance, have been too patent to be neglected. As the localities have been checked by an unsound rating system from undertaking the remedy, Parliament has been forced to come to the rescue. Parliament has been in the hands of a governing class which is jealous of its privileges. In such a situation paternalism becomes inevitable. The fact that the effort is central rather than local is itself a force contrary to individual self-reliance, especially when the legislation has been so much in the hands of a privileged group. Paternalism has become inevitable because England has placed the emphasis upon government for the people,

not of the people.

The American System Analyzed

The economic foundations of the American cities are on sounder lines. The land tax has brought ample revenue. With the ample revenue has come a civic attitude of generosity. This has permitted civic self-reliance, which in turn has rendered central supervision unnecessary. The tax on the capital value of land is at the root of the administrative home rule, which has made the local interest so keen. As the state and nation have become more self-conscious, they have found the cities voluntarily undertaking many of the functions essential to the welfare of the state.

The anti-class doctrines of Jeffersonian and Jacksonian democracy brought mixed results. The unsound thinking which upheld equality of ability was a prime factor in developing the belief in rotation in office and the spoils system, with their inevitable corruption and lawlessness. On the other hand, this type of democracy guided education toward an emphasis first upon citizenship and then upon equality of opportunity. The closer the approximation to the latter, the more possible became a social system based upon individual self-reliance.

The Systems Compared

The above analysis is in the barest of outline. The number of complicating or extraneous factors in each country has been large. Two of these deserve passing mention. "Separation of powers" obscured responsibility to the electorate, but has rightly emphasized the importance of a strong executive in any administrative problem of great complexity. The "common-sense" solution has kept England from any such highly doctrinaire experiment as "separation of powers," but the price paid has been great—particularly in financial adjustments between central and local authorities.

Returning to a comparison of the two main lines of analysis—the economic and the social—the foundations of the American system appear to have been more correct. The unsound local revenue system of England has led to a whole series of unfortunate consequences, the most insidious of which in its undermining effect upon local self-government has been the same central aid and central control which were designed to relieve the hard-pressed local authorities.

The differing social systems of each have within them a truth and a falsehood. The error of England has been the assumption of status, which in effect constitutes a denial of the efficacy of individual self-reliance. The error of America has been the assumption of equality of ability, which has rendered respect for the office-holder almost impossible. The strength of America has been the emphasis upon equality of opportunity, which is essentially opposed to privilege. The strength of Great Britain has been the emphasis upon the dignity of public service, which has created an atmosphere where corruption is well nigh impossible.

"Government by Distrust"

Distrust in the forms peculiar to each country now becomes more comprehensible. In England, it is the people and the popularly governed localities that are distrusted by the governing classes in Parliament. This distrust rests upon the conviction or tradition that the most intelligent are always the most capable of attending to the details of government. Centralization, both legislative and administrative, has been the result.

In America, the people, who are suspicious of any show of superiority, and who have been bred in doctrines of popular sovereignty, distrust those in official position. "Checks and balances" and the devices of direct government have been the result.

"Government by distrust" has not been a great success for the cities in either case. It has more frequently tended to create the situation it postulates—in England, an irresponsible local authority; in America, a corrupt city government.

The Aim of City Government

After this final analysis of city government, one is better prepared to present in summarized form the principal recommendations that have from time to time been suggested.

The aim is to develop each city into an intelligent, self-reliant, self-governing community; that will voluntarily seek, through the medium of an honest and efficient local government, not only to perform the ordinary services of a communal life, but also to approximate equality of opportunity for its citizens and to guide the political, social, economic, and intellectual development of these citizens in the manner best suited to strengthen the nation.

Recommendations for American Cities

The United States should concentrate its efforts upon the removal of the weak phase of its opposition to class—namely, the assumption of equality of ability. This would involve appointing such officials as are not suitable subjects for choice by popular election—in other words, the "short ballot." More fundamentally, it means a reconstruction of the whole attitude toward office and office-holding, toward the

law-maker and the law. The evil is easy to point out, but difficult to remedy.

Except for this, American cities seem to be building upon sound foundations—flexible revenue, home rule, and equality of opportunity. The first of these three is in little danger, but more use should be made of a provision for partial exemption of improvements. The second seems to be gaining in favor, but too few states have actually incorporated home rule provisions in their constitutions. There are also evidences that the principle may be threatened from a more insidious enemy than the old legislative interference. This threat lies in the Federal grant-in-aid. The experience of England should prove a warning. The third assumption of equality of ability is as great an enemy to equality of opportunity as privilege ever was. The American democracy, with all its efforts to make education available to all, has failed to realize that the individuals to whom opportunities are extended are utterly diverse in their natures and in their capabilities as well as in their ambitions. It has too often sought to mould all to a type, to enforce conformity. Once the fallacious part of the anti-class philosophy has been removed, the sounder part will be better able to render its service.

Recommendations for British Cities

In the United Kingdom the fundamental economic need is to make the tax on the capital value of land available to the cities. This should be combined with the removal of subventions and central supervision (subject to the exceptions previously noted). In addition, legislative home rule should be extended through endowment of the cities with charter-making power and control of functions so far as compatible with national law. This combination of local freedom and adequate resources will cause the evils of the existing system to be brought within the range of local remedy. Education for citizenship should then supplant education for status. Efforts toward equality of opportunity will then replace economic privilege. Paternalism will yield to individual self-reliance. The cities may be expected to accomplish these results, for the cities have sought the right to make secondary education free and to obtain powers of taxing land. It has been Parliament (where privilege and paternalism have been more entrenched) that has blocked these reforms.

Local freedom would develop charters more capable of adjustment to changing circumstances than is the present Parliament-made framework. The central department, almost wholly advisory under the proposed plan, would be more inclined to engage in research and accordingly more able to render intelligent advice.

If there be a case for centralization in England, it rests upon defects in the revenue system, in the framework, in the method of solution of the problems of area, and in the low general level of education. It is the revenue system that causes the cities to be disinclined to undertake many functions which minister to the national interest. The framework obscures the educational function, does not assure that it will be administered by specialists, and hence causes it to be neglected locally. It has proved extremely difficult for many cities to obtain much-needed annexations, and to enjoy the consequent stimulus to vigorous municipal life. Secondary education is stunted through the existing basis of award of central subventions. The remedies for these and the consequent release of local energy have already been suggested. These same remedies can be better carried out through home rule. In each case the defect itself has been caused or retained by Parliament, usually in contradiction to the expressed will of the cities. The case for centralization rests upon defects which centralization has itself created.

Direct government should be introduced in charter changes and annexation. Other extensions of direct government should be preceded by appropriate advance in education.

In the not too distant future these methods, if adopted, should furnish solutions to many of the problems of housing, local financial stringency, undue rise in governmental costs, inefficient municipal administration, and indifference and narrowness of city self-government. In addition, substantial contributions should have been made thereby toward the creation of equality of opportunity, lessening of poverty, and the political education of the electorate.

Comparison of Recommendations

The situation in British cities appears more complex and difficult to remedy than do the evils of American cities. In reality, it will probably prove to be otherwise. The cities need only their freedom to consummate their own remedy; while in America the chief difficulties are psychological, and have consequences and ramifications beyond the cities alone. Human nature must itself be changed, so that it will regard city government in the spirit of the Colonial days and in the spirit which the English city has never lost—the spirit of mutual respect of the electors and the elected for each other.

Park Values and Land Values

Delay in Acquiring Park Lands, Especially in Urban Communities, is Both Dangerous and Costly

By Frederick W. Kelsey

Vice-President of the First Essex County (N. J.) Park Commission

THE acquirement and development of public parks is rapidly becoming one of the most important functions in national, state, county, and municipal affairs. This condition is exemplified both in the United States and in the Canadian provinces. From the Grand Canyon in Arizona to the Yellowstone Park, the Glacier National Park, Mount Ranier, the big tree reservations and so on to the great Jasper Dominion Park, in the West and the North, through the intermediate parks and reservations throughout the Central and Eastern States to the Metropolitan Park System about Boston, there is abundant evidence of this popular movement. Its rapid growth is being accelerated by the equally rapid growth in population and material wealth, as also by the popularity of the parks and their ever increasing use by the people in all stations of life. Moreover, the widespread use of the automobile and other improved methods of transportation have made even the most distant parks readily accessible. In the Yellowstone Park during the Decoration Day holiday of 1927, more than 40,000 automobiles entered the park; and all through the summer auto cars from every state in the Union and from British Columbia and Canada were to be seen there, as in the other National Parks, in ever increasing numbers.

In my recent trip to the Canadian Rockies I noticed the same situation prevailing at Banff, Lake Louise and Emerald Lake, the cars coming both from the Atlantic and Pacific coasts and from intermediate places. What the conditions will be 25 or 50 or 100 years hence, only the imagination can predict.

Besides the public approval of parks and recreation centers, a factor in bringing about this universal park movement has been the activities of many organizations, such as the American Institute of Park Executives and American Park Society, the National Council of State Parks, the Playground and Recreation Association of America, and many other far-seeing and patriotic associations and individuals; and many also in official authority in the various branches of government without whose cooperation and continuous effort such progress would not have been possible. The New York State Parks and the new Westchester County Park System with its more than forty millions of dollars expenditure the past few years, are cases in point.

Increasing Importance of County Park Undertakings

The county park undertakings are now, like the national and municipal parks, becoming of great importance. Essex County, N. J., was the initial county park undertaking in the country. The commission of five members, appointed by the presiding Justice of the Supreme Court, was authorized by the Legislature in May, 1894. Nearly $10,000,000 has already been expended on the park system; and in November last on a referendum vote a bond issue of $5,000,000 more was approved by the electorate of the county by a majority of nearly two to one. Two other New Jersey counties—Hudson and Union—have since appointed similar park commissions; and Bergen, Passaic, and Camden Counties have now commissions or park movements under way. Outer parks of extended proportions are also being established or developed in Allegheny County, Pa., in metropolitan park systems about Cleveland and Detroit, the great forest reservations about Chicago, and in many other localities, east, west, and south. The impetus for parks seems to grow on what it feeds upon —the pride and pleasure of the public. The incomparable Interstate Bear Mountain Park on the Hudson, like many other attractive parks, is a forcible reminder of this fact.

Another very important factor in accentuating the movement for parks everywhere is the increment of land values which almost invariably follows as a result of park acquisition and embellishment. In some places the increase in ratable values is enormous, thus in a great measure returning through taxation the cost of the park lands and improvements. There are too many well-known instances where greatly increased and increasing values have occurred from park locations to call for further reference or citations here. Then, too, it should be borne in mind that park land itself in all growing communities is constantly increasing in value. This is in striking contrast to the depreciation which constantly goes on in almost every other kind of improvements

—buildings, roads, streets, bridges, etc.

Then again, the rapid increment in realty values, especially since the great war, makes it more and more difficult to obtain lands well located for parks without a penalty for delay in having to pay excessive prices for the land. In Essex County the cost of the 3,774 acres of lands now in the parks and parkways there would today run up into so many millions as to make the acquirement of those lands at the present time largely prohibitory. And this situation applies to very many of the established parks in all parts of the country. For this reason in acquiring park lands, especially in urban communities, delay is both dangerous and costly.

Asphalt Penetration Macadam in City Service

THE cost of constructing an asphalt penetration macadam street or highway is lower than that required for other hard-surface pavements. Many communities in need of better roads, but financially unable to construct a hot-mix asphalt pavement, have found in asphalt penetration macadam a serviceable pavement which is within their means.

Mineral Spring Avenue in North Providence, R. I., was paved in 1920-1921 with Texaco asphalt macadam. Local stone was used and 2.7 gallons of asphalt applied to the square yard. A traffic census taken in 1923 showed an average daily traffic on this highway of 3,000 vehicles. The manner in which the asphalt macadam surface has stood up under its traffic is best demonstrated by the maintenance figures which are given:

	Per Sq. Yd.
1924	$0.005
1925	0.000
1926	0.005

The yardage involved is 36,680. It was considered advisable to set a maximum load of 20,000 pounds for Mineral Spring Avenue.

A Texaco asphalt macadam pavement was laid in 1916 on the Boston Post Road between Apponaug Bridge and Division Street, East Greenwich, R. I. A 1923 traffic census on this highway showed a heavy daily traffic of 11,000 vehicles. Because of the presence of a car line on this highway, traffic on the road is concentrated and conditions are thus made more difficult for the pavement. Nevertheless, it has now successfully survived eleven years of traffic and gives promise of years of additional service.

ASPHALT PENETRATION MACADAM ON THE BOSTON POST ROAD OUTSIDE OF EAST GREENWICH, R. I. CONSTRUCTED IN 1916 AND NOW CARRYING A DAILY TRAFFIC OF 11,000 VEHICLES

Flint Leads Cities of 100,000 and Less in Acreage Acquired for School Purposes Since 1915

AMONG cities of its class, Flint, Mich., leads the country for total acreage acquired for school purposes since 1915, according to a bulletin issued by the National Conference on City Planning, which made a national survey of all cities over 15,000 population as to size of school sites acquired in the last ten years.

"The total acreage for schools acquired since 1915 is striking in several cities of 100,000 population and under," the report states. "Flint, Mich., and Gary, Ind., lead with 274 acres and 188 acres, respectively, although the 90 acres of San Bernardino, Calif., a city of 20,000 population, are even more impressive. Using the increase in population from 1919 to 1920 as a basis, it appears that at least 20 of the smaller cities in the country have acquired for every 1,000 increase in population from 2½ to 8 acres of land to take care of school needs.

"These facts are of great significance to city planners who are urging on the cities of the country a program which shall result in:

"1. Fairer distribution of open areas throughout built-up portions of the city.

"2. Such a control over the subdivision of large unbuilt areas as will result in the setting-aside of a portion for neighborhood open spaces.

"3. The creation of a belt of open land on the fringes of cities. Some of this will be in private ownership, that is, large estates, golf and country clubs, farms; some in public reservations, as water-supply areas, municipal forests and large parks.

"Schools are or should be distributed on the basis of population and it is logical to have in the site area enough for playgrounds at the elementary school, and at the high school for playground and athletic fields. If these areas are large enough to provide in addition for neighborhood parks, one of the aims of the city planner, namely, better distribution of city open areas, is in the way of being reached."

"Moreover, if high-school sites can be placed not in the center where land is expensive, but at the edges where it is relatively cheap, then the open-belt ideal of the city planner will receive practical support. The information on which this bulletin is based can hardly be said to point to a trend in this direction, but several cities report that their new high schools are being taken out of the center.

"The distribution of open areas and the best use of these areas, whether for playgrounds or parks, can only be settled when park boards and school boards work together.

"Five acres or more for elementary schools and ten acres or more for high schools, whether junior or senior, have been acquired by several cities in each of the following states: California, Georgia, Indiana, Michigan, Minnesota, Ohio, North Carolina, Pennsylvania, Texas, and Wisconsin. Sixty cities either definitely report a policy of securing for elementary schools five acres or more and for high schools ten acres or more, or the acreage secured indicates such a policy."

The Michigan cities referred to are Flint and Pontiac, with Grand Rapids mentioned in the class of cities having 150,000 population or more.

It should be noted that while Flint's population according to the 1920 census was 91,599, the estimated population is now about 150,000.

C. W. OTTO,
Manager, Chamber of Commerce.

Local Health Authorities Upheld in Refusing Milk-Selling Permit to Applicant Who Was "Not a Proper Person"

Milk Ordinance Upheld—(Alabama Supreme Court; Walker *v.* City of Birmingham et al., 112 So. 823; decided March 31, 1927.) The plaintiff brought suit to restrain and enjoin the city of Birmingham and the local health authorities from interfering with his business by refusing to grant him a license to sell milk in the city. The ordinance gave to the board of health power to refuse a permit when in its judgment, the applicant was not a proper person, and also made provision for a hearing. The Supreme Court said:

"We think there can be no serious objection to the bill on the ground that the ordinance governing the sale of milk on the city of Birmingham is void as involving the unwarranted delegation of legislative power. The act of August 20, 1915, section 6, armed the city with the full and complete power to adopt ordinances and regulations, not inconsistent with the laws of the state or the state and Federal Constitutions, providing for the safety and preserving the health of its inhabitants. (Acts 1915, page 294, et seq.) The administration of such an ordinance may be committed to subordinate officers—necessarily must be—without offense against any principle of constitutional law. * * * Nor is the ordinance objectionable as committing to an officer or officers the power to decide, according to their own notion in each particular case, the question of issuing or withholding a license, and thus deciding according to their unregulated discretion who may, and who may not, engage in a legitimate and useful—even, we may say, necessary—business, for, while it confers upon the board of health the right to refuse a permit 'when in its judgment the applicant for such permit is not a proper person to be granted such permit,' the further provision is that in every case the applicant shall have the right to be heard in person or by counsel, or both, with the right to introduce competent evidence in support of his application, and the right of the board to revoke licenses is safeguarded in like manner * * * the ordinance in this case made ample provision for a hearing."

—From *Public Health Reports*, July 15, 1927.

$280,000 Worth of Highway for $1

MASSACHUSETTS is to have a new section of state highway 8,371 feet in length built of bituminous macadam and reinforced concrete for the amazingly low sum of $1. This project includes the laying-out of the highway over a new location in the vicinity of Wayside Inn in Sudbury, Mass., which was purchased by Henry Ford two years ago and reopened as a museum and inn for the traveler. This highway work is aimed to correct a dangerous situation and is calculated to remove heavy truck traffic to some distance from the Inn.

The contractor is Henry Ford, and the contract, signed late in August in Boston, is as formal as that for any kind of state work, and ample surety was given to assure its completion. The right-of-way is to be 100 feet in width and there will be a central way 10 feet wide of bituminous macadam with a cement-concrete way 10 feet wide on each side of it. With a 3-foot shoulder of macadam and a 7-foot grass plot on each outer side, the total width of the roadway itself will be 50 feet.

Policewomen and Public Recreation

By Helen D. Pigeon

Executive Secretary, International Association of Policewomen

TO delegate the official supervision of dance halls, moving-picture houses and similar places of public recreation to policewomen is rapidly becoming a common practice. This is true in the large cities, where women's bureaus assign this as a permanent duty to certain members of their staff, as well as in rural communities, where the lonely policewoman adds to her routine case work an occasional evening at the village dance or picture show.

Such functions naturally come within the power of the police department, which embraces "the preservation of peace, the protection of life and property, and the prevention of crime." Too seldom has the average lover of "personal liberty" been willing to afford the police the facilities and the personnel for that essential third function, the prevention of crime, just because the roots of crime are embedded in the social, and therefore personal, life of the people. But the advancement of the social sciences and research into the causes of delinquency have led to a better understanding of the intimate connection between unwholesome recreation, or the lack of recreation, and crime. A new civic consciousness has come into being and it very properly expresses itself through the policewoman's movement.

Further Information About the Services of Policewomen

will be furnished on application to the International Association of Policewomen, 220 Star Building, Washington, D. C.

In her capacity of Executive Secretary of the Association, the author of this article recently addressed the Anti-Crime Convention of the Sheriffs and Chiefs of the Northwest, at Nelson, B. C., and after conferences with Mayor Landes at Seattle and the Police Department of Portland, delivered lectures on policewomen's work at the University of California, both Northern and Southern Sessions.

Supervision of Dance Halls*

Thirty-five out of forty cities answering a recent questionnaire reported that the policewomen supervised the dance halls. In certain cities a definite machinery has been developed. It includes licensing, the selection of matrons, regular visits of inspection, and the power to revoke licenses for violations. In addition, the cases of young people who are in special need of protection or whose behavior is obviously leading to delinquency are followed up by the policewoman, in accordance with the standards of good case work. In Dayton, Ohio, for example, the dance halls have been supervised by the policewomen since their appointment in 1914. A set of rules for city-wide regulation were drafted from suggestions submitted by the managers and adopted by mutual consent. These rules formed the basis for a new city ordinance, and applicants for licenses are obliged to signify their willingness to enforce the regulations before they can secure a permit from the Bureau of Policewomen. Since the staff was at first limited to two, a Public Recreation Committee was organized to visit the dance halls under the supervision of the policewomen. The years have shown a very steady improvement in the class of managers and in the halls, and the policewomen's work was so much appreciated by the citizens that a move to replace them with uniformed men met with immediate objection.

When the volume of work increased, it was necessary to appoint three women—two white and one colored—for the special task of supervision, but they were not given police power. A movement is now on foot to have one of these inspectors made a policewoman, who will devote one-half of her time each day to following up problem cases especially related to the dance hall. A new ordinance was put into effect in 1923 in which the age limit was raised from sixteen to eighteen years, and in 1925 a state law was passed embodying many of the provisions of the ordinance and rendering enforcement an easier task.

In Wichita, Kans., the public dance hall ordinance was revised in 1921. It carefully defined a dance hall and provided for a supervisor, appointed by the city manager and under the Women's Bureau of the Police Department. She holds the full responsibility for licensing. The individual and not the hall is

*On this subject see also article by Chloe Owings, of the American Social Hygiene Association, on "Some Current Practices in Dance Hall Regulation," in AMERICAN CITY for June, 1927, pages 783-6.

licensed, so that censure cannot be shifted to innocent shoulders, and he is held responsible for the physical and moral conditions in his hall. The age limit is eighteen and, if there is any doubt, the manager must obtain a registration and refer the case to the supervisor for investigation. The managers are brought together for a frank discussion of their problems, and this has resulted in a much better understanding. Last year 810 cases were followed up by the supervisor and many young people in need of warning and guidance have been helped over some crisis. In company with many other states which have found the limits of its cities indefinitely extended by the use of the automobile, Kansas is contemplating a state law for the control of roadhouses.

In Indianapolis the managers are obliged to engage matrons who have been carefully investigated and recommended by the policewomen, and these matrons are instructed to guard the welfare of the young people and report immediately any infractions of the rules by the management.

The facts which the policewomen have collected and interpreted to the civic groups of their community have influenced constructive legislation and the provision of more wholesome recreation for all classes. In some places, where the situation does not warrant the appointment of policewomen at all times of the year, they serve during the summer at amusement parks and beaches. Women have been made deputy sheriffs and members of state police forces, and lately a delegation asked the Commissioner of Public Safety in Massachusetts to appoint a policewoman to enforce a recent roadhouse law.

Visiting the Motion-Picture Houses

In answer to the questionnaire alluded to above, 34 cities reported that the policewomen visited the moving-picture houses regularly, but the methods of procedure are not so clearly defined. The fear of unfair censorship made many of the managers hostile to their visits, but cooperation has been won through patience and tact. The experience of the Washington Woman's Bureau, as explained in a recent article by Miss Mary Gainey, Supervisor of Patrol, seems to be typical of many cities.

"Such was the situation until in a downtown theater a policewoman arrested a man for indecent action. The manager was agreeably surprised that she would handle such a case. Disorderly men of this character had long been a source of annoyance to women patrons, but they were never caught because of the unwillingness of women to appear against them and because policemen or house attachés could not get the necessary evidence. Similar arrests followed and the manager, realizing that a splendid piece of work was being done, told others about it and requests began to come to the Bureau to detail policewomen to other movies to take care of like situations. The managers looked upon this type of work as something new and of economic value to the house. It would relieve them of the danger of lawsuits for illegal ejection of alleged offenders whom excited patrons might wrongly identify. The case would be legally attended to and the patron protected without embarrassment. Cooperation in these cases was but a step to placing other problems before the managers, such as truants, 'parked children,' disorderly children, missing persons, physical conditions of the theater, and eliminations in films. The policewoman having shown her usefulness, the managers felt that they must express their appreciation of the service by making it possible for her to perform other details of her work.

"Soon many different types of cases originated in the movies, as an inspection report of 1925 will show: visits made to movies, 2,446; truants removed, 259; disorderly juveniles removed, 14; children found asleep late at night, 37; men arrested for indecent acts, 13; women arrested for indecent acts, 1. All these cases were carefully investigated and the necessary adjustments made, and where bad social conditions were found to exist in the home, they were referred to the proper agencies for intensive family case work. The admission fee admits all without any regulation as to age or time of attendance of juveniles, so any action taken by the policewoman is made possible only by the help of the management. Many concrete demonstrations of the willingness of managers to assist are of record. They also publicly acknowledged that they regard the policewoman as an outstanding agent in the prevention of delinquency."

The burlesque show has presented a more serious problem. In some cities moral suasion and patient methods of education have had to give way to threats of revocation of license and even to the arrest of offenders on the stage, when the act or words were obscene. This led one chastened manager to engage his shows from a more innocuous circuit, and to his surprise his business immediately improved, since it happened to fill a long-felt want among the women for good vaudeville at the matinee. Gradually the word is going around that the policewomen mean business when they demand clean shows, and the managers take the pains to instruct the perfomers as soon as they arrive.

The Baffling Question of Standards

The question of standards in this new and tremendous industry is baffling. Frequently policewomen serve on local boards of censorship, but in their official capacity as policewomen they cannot interfere with the showing of films which are vulgar or in bad taste, unless they come within the provisions of the law relating to indecency. They must depend upon winning the cooperation of the managers

and on the sentiment of the public itself. There seems to be a general feeling among them that the problem is one of education rather than suppression, and that its solution depends on the activities of the various civic groups in creating a sentiment for better pictures, and on efforts within the industry itself, such as the Will Hays organization is now making.

Another question which depends on the cooperation of managers relates to the admission of young children, without parents or guardians, at late hours in the evening or during the school period. Most cities do not have regulations which cover this point, and careless parents are making the problem serious. Relief is coming in many cities through the use of the curfew law, which is ably administered by the policewomen, and the managers are aiding in its enforcement by throwing a warning on the screen as the hour approaches, "Kiddies, it's curfew time." Usually this law carries a penalty for parents, and it provides an efficient weapon for the policewoman in regulating all phases of public recreation.

Policewomen also visit the cabarets, skating-rinks and public amusement parks, and this field of service will unquestionably be widened when more adequate staffs are provided for the women's bureaus. Even now the volume of work is exceedingly large. According to their most recent reports, the policewomen in Tacoma paid 215 visits to amusement places last year; Minneapolis, 1,024; Detroit, 1,548; Wichita, 810 to dance halls and 761 to theaters and moving-picture houses; and in Washington 2,186 visits were paid to moving-picture houses, 411 to dance halls, and 750 to cafés.

Other Features of the Policewoman's Service

Anyone familiar with the problems of public recreation can see the advantage of centralized control and regular supervision. This is especially true when it is carried on by a group of women who are well educated, with an experience in social work which enables them to diagnose the problems correctly and interpret them intelligently to public officials and to the public in general. The appointment of women of this caliber is becoming more common every day. Another important feature of the policewoman's service is her ability to connect case work and community work. As most of our social agencies are constructed, they lack the machinery to render service to the individual through case work, at the same time that they serve the community at large. Thus a great deal of valuable information revealed in case investigations is lost, because the agency is unable to take action itself and naturally loses time and force in transmitting the facts to some other agency. The policewoman deals with cases, and she has at hand the power and the machinery to secure immediate and intelligent action when she discovers dangerous conditions.

Policewomen are not neglecting their opportunity to instruct the public in "how the other half plays." Their service has received the endorsement of such national groups as the League of Women Voters, Daughters of the American Revolution, General Federation of Women's Clubs, National Congress of Parents and Teachers, and Woman's Christian Temperance Union. The local branches of these organizations, which are making the welfare of youth an important part of their program, offer a rare opportunity to bridge the chasm which has existed too long between the police and the public. Of the 40 cities questioned, 35 reported that the policewomen made public addresses a regular part of their service, and the associations which they listed covered religious, social, business and professional activities of every description. This undoubtedly has its effect in two ways—in curbing abuses, and in demonstrating the necessity for wholesome recreation for youth, and plenty of it. Better yet, it banishes part of the ancient antipathy which so many people feel for the police service.

The American Civic Association's Traveling Meeting

THE American Civic Association will hold its First Traveling Annual Meeting in the form of an inspection trip to view the outstanding accomplishments of three New England Regions as the guests of the planning officials and civic organizations of the Boston Metropolitan District, Providence Region and Connecticut Valley.

The party will start Monday morning, October 24, from the Bellevue Hotel, Boston, will spend two days in the Boston Region, motor Wednesday morning to Providence, and Thursday afternoon to Springfield, and will end the trip Friday evening, October 28, at Springfield after a day in the Connecticut Valley.

Massachusetts and Rhode Island are exerting every effort to show what they have done in the development of regional parks and parkways, routes of business communication, planning for industry, commerce and residences in convenient locations within an entire district, and generally to point out the achievements of cooperative planning beyond the limits of a single city.

Air-made Wells for Water-Supply, Chandler, Okla.

By Webster L. Benham

Benham Engineering Co., Kansas City, Mo.

THE city of Chandler, Okla, having a population of approximately 3,000, has for many years obtained its water-supply from large dug wells on the banks of Bellcow Creek, and from a large number of shallow tubular wells located southwest of the city. Some years ago water was pumped from Bellcow Creek, where a small supply was impounded by means of a crudely designed dam. This water was badly polluted and muddy most of the time, and no means of filtration or sterilization were provided. At times, because of a shortage of supply, the city has been obliged to call upon a local cotton-oil mill to furnish what little excess supply it had.

EXTERIOR OF THE CHANDLER, OKLA., WATER-WORKS, SHOWING AERATOR IN FOREGROUND AND COVERED RESERVOIR IN REAR

At various times the city has had test holes drilled and considerable money has been spent in endeavoring to locate a satisfactory supply of water. Test holes 300 feet in depth developed the fact that below 100 feet no potable water is available, and at a depth of 275 feet in one test salt water was encountered. Until the new water-supply was developed, the city depended almost entirely upon seventy small tubular wells pumped by means of jacks operated in clusters from a central plant containing gasoline engines. The efficiency of these wells was very low indeed, and the combined capacity of all, by actual pumping tests extended over a period, amounted to less than two gallons per minute per well when all wells were operating. This amount, however, could not be obtained for any great length of time because constant repair work was necessary, and the city could not count on more than 100,000 gallons per day. There have been times when even this small amount could not be pumped. The water was pumped from the wells into three covered circular storage basins excavated in sandstone, the upper part being of brick. These basins have a total capacity of approximately 450,000 gallons but were rarely filled, as they were poorly constructed and leaked badly. The pumping-station consisted of a native stone building of antiquated construction containing return tubular boilers and compound duplex steam pumps which are practically worn out and useless.

Water-Supply Problem Studied

It will be seen that the whole plan was very inefficient and costly to maintain. Additional and larger water-mains were necessary in the city and no means had ever been provided for sterilizing the water or for measuring the quantity pumped and delivered to consumers. The quality of the water was satisfactory—what there was of it. It was thought for a

TYPICAL AIR-LIFT WELL HOUSE AT CHANDLER, OKLA.

time that the water-supply problem could only be solved by constructing a dam on Bellcow Creek northwest of the city, just above the point where three creeks join. At this point a reservoir holding approximately one-half billion gallons of water could be impounded from a tributary drainage area of approximately 44 square miles, and water carried by gravity to a new filtration plant and pumping-station located in the valley directly west of the city of Chandler. Because of the above extensive drainage area and a porous soil formation there was little doubt of the existence of a large underground supply of water in this valley, but owing to the character of the formation it seemed doubtful that a water-supply from wells could be developed, as apparently no water-bearing gravel or sand existed. A typical analysis of the water is as follows:

PARTS PER 100,000

Calcuim sulphate	None
Calcium carbonate	10.6
Calcium chloride	None
Magnesium sulphate	None
Magnesium carbonate	17.1
Magnesium chloride	None
Sodium sulphate	2.5
Sodium carbonate	12.8
Sodium chloride	6.5
Silica	1.0
Iron and alum, oxide	Trace
Organic and volatile	0.3
T. D. solids	50.8
Alkalinity	43.0
Hardness	30.2
Scaling rating	Very good
Foaming	Fair

It seemed that the formation might be compared to a thick piece of blotting paper where the water was held in the voids and would be difficult to extract. The mayor insisted that complete data be obtained and a well of the gravel wall type be constructed. A firm of experienced well drillers was employed by the city to drill test holes in Bellcow Creek valley just west of the city and north of the old shallow well system. About thirty holes were drilled by boring and jetting, and a careful log was kept of all such test wells. These tests, which varied in depth from 30 to 105 feet, were carried down to hard red sand rock. The character of the formation varied, and very fine silt and clay were encountered separately and in combination, but in no case was there encountered what could be classified as water-bearing sand or gravel from which it might be at all certain that a dependable supply could be developed.

While these drillers did not feel encouraged, considering the underground formation which was evident from logs of the test wells, nevertheless, with assurances from one concern specializing in the construction and equipping of wells of the Air-Made Gravel Wall type, the city decided to actually construct one of these wells at the location which appeared the most favorable from the data obtained from the tests. The following is a chemical analysis of the water-bearing strata:

	Per Cent
Moisture	1.35
Loss on ignition	3.98
Silica	81.04
Alumina	7.76
Iron	2.72
Lime	1.56
Magnesia	1.04
Alkalies	0.55
	100.00

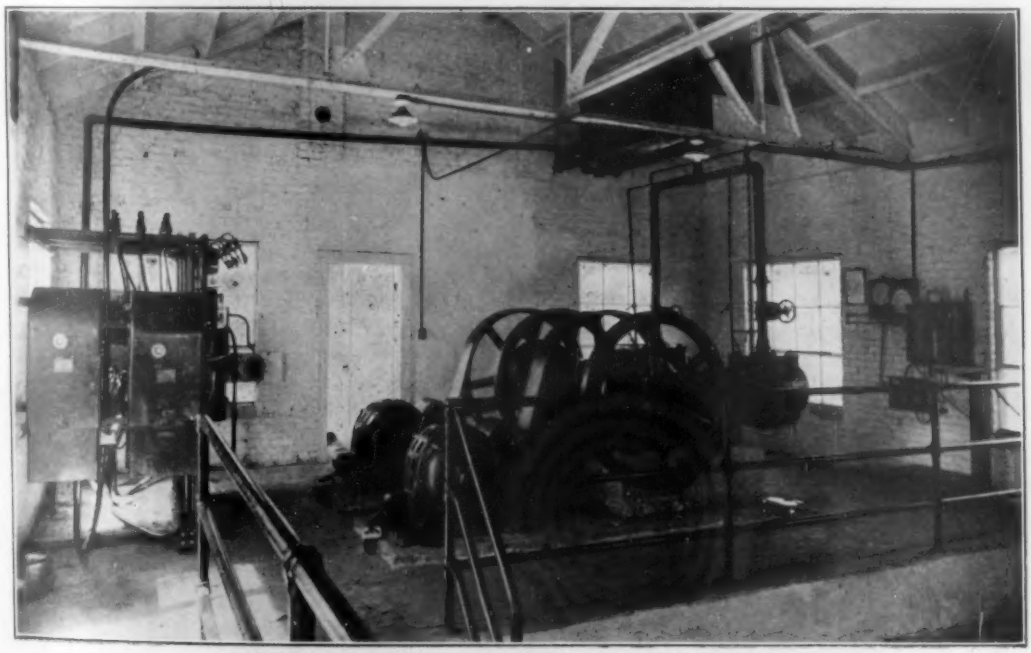
The location was made and the well was completed, after which a test was conducted of twenty-four hours' duration, indicating that 60 g.p.m. could be pumped with no draw-down in the water-level surrounding the well. This result was somewhat astonishing, and the city immediately let contracts for putting in four additional wells to yield not less than fifty g.p.m. each, all of which were to be of the Air-Made Gravel Wall type. A temporary pipe line leading from the first well to the old storage reservoir was constructed, and the available supply during the summer months of 1926 was thereby doubled by the use of water from this well. The Engineer was also instructed to complete his plans and specifications for this type of supply. These plans included air and water lines, duplicate compressors and equipment for air pumping, concrete well heads and housing, high-duty pumps, chlorinator, pump-station building, sand and grit settling-basin

with measuring weir, for removal of fine silt and sand, 500,000-gallon capacity reinforced concrete circular storage reservoir and an additional water-main extending to the heart of the city. A 4-inch by-pass line was also included in the plans in order to provide the municipal swimming pool with water by gravity from the nearest well. Construction work was started in the fall of 1926 and all work was completed during April, 1927. Each well was constructed substantially in the following manner:

A 12-inch outer casing was sunk to the hard formation immediately below the stratum which was to be developed, the average depth being about 80 feet, the purpose being to cut off the sand and water-bearing strata. There was then set in place an inner tube or casing 8 inches in diameter with a perforated section set at least 3 feet below the water-bearing stratum and extending upwards through the lower two-thirds of the water-bearing stratum. The perforations consisted of ½-inch holes on 1¼-inch centers. The perforated casing in every instance extends below the water-bearing stratum a proper depth in order to provide the necessary submergence for efficient operation. In the past, pumping from the shallow tubular wells by air had many times not proved efficient because of the fact that mistakes were made in not placing the air pump below the water-bearing stratum far enough to provide for proper submergence. It is surprising indeed, that any attempt was made to pump by air without providing for this feature.

In order to keep out shallow ground water, an outer casing was sunk to a depth of about 15 feet around the 12-inch outer casing. The walls were constructed by introducing clean rounded gravel screened through a 1-inch mesh and retained on a ½-inch mesh. This gravel was placed between the inner and outer casings and forced back into the water-bearing stratum by the use of a reverse flow of air under pressure. The outer tube was slowly raised, thus replacing the gravel and forming a gravel cone which allows the infiltration of water and very fine sand from the surrounding sand stratum adjacent to the well. This alternate "back-blowing" and pumping, together with replacement of fine materials with graded gravel, was continued as the outer casing was withdrawn, until the casing reached the top of the perforated section of the inner casing. The "back-blowing" was continued day after day until no more gravel could be forced into place in appreciable quantities. Observation holes were put in for the purpose of determining the level of the ground water and the draw-down during the period of pumping and testing.

The gravel wall thus formed acts as a barrier around the perforated section and holds back the compacted coarse sand, but at the same time allows the loose fine sand to come through. As much as 15 cubic yards of gravel replaced the fine sand pumped out of each well during construction. In other words, an underground reservoir was created and the water which gradually percolated into this coarse artificial



COMPRESSOR UNITS AT CHANDLER, OKLA., WATER-WORKS

gravel stratum found its way practically unimpeded to the air pump set well below the bed of the water-bearing stratum. The gravel wall and reservoir will prevent cave-ins from the formations above and surrounding it. As the gravel was forced under pressure into the space vacated by the fine materials, it became compacted and acted as a filtering medium. What fine silt and sand came through in the process was pumped out without harmful effects to the air pump, which, of course, has no moving or wearing parts.

The well heads are constructed in such manner that gravel can be fed continuously and automatically into each well by a hopper arrangement as the fine materials find their way into and through the gravel wall. To provide for collection and removal of this fine sand, each well is equipped with a by-pass valve which enables the operator to blow off the well for a few minutes before turning the water into the flow line to the collection reservoir. To provide for complete removal of all fine material, a sand and grit settling-basin is provided and the water from all five wells flows over a vertical riser pipe into the basin. The basin is large enough to retard the velocity of flow sufficiently to allow the fine material to settle out before entering the reservoir. Bottom drains connected with a sewer enable the riser pipe, basin and reservoir to be cleaned out, as occasion demands. The wells are constructed so that by closing the discharge valve air is forced out through the perforations into the gravel well, thus loosening any spots which have caused clogging and tending to retard the free flow of the water through the gravel.

The air pumps installed in the wells have a rated capacity of 50 g.p.m. under a total head of approximately 85 feet under actual pumping conditions. The pumps have delivered under test as high as 90 g.p.m. The water from each well flows by gravity through lateral lines to a main line, sizes 6, 8 and 10 inches, into the sand and grit settling-basin located between the pump-station and the reservoir. Paralleling the water line there are air lines from the compressors located in the pump-station, such air lines ranging from 1½ to 2½ inches at each well. The plant is arranged so that all wells can be controlled and operated from the central station, but for practical operation and to insure proper attention it is planned to operate the wells strictly by hand at each well.

In the brick pumping-plant are located duplicate belt-driven compressor units with motors, the two high-service pumps, meters for measuring the amount of water pumped, chlorinator, switchboard with starters and protective devices.

The air-compressors are single-stage, straight-line, double-acting type driven by 40 hp., squirrel-cage type, 2,300-volt, 3-phase, 60-cycle, 1,200-r.p.m. ball-bearing motor, equipped with overload and voltage release and all starting equipment. These compressors are of size to furnish sufficient air at pressure sufficient to pump a combined capacity of 400 g.p.m. The air receiver, 3 x 8 feet, is equipped with all necessary gages, safety valves and drain valves and tested for 125 pounds pressure per square inch.

The high-service pumps are horizontal split case of the centrifugal type, sizes 350 g.p.m. and 500 g. p. m., driven by 50-hp. and 75-hp. motors and operating against total heads of 265 feet and 280 feet respectively. The motors are of squirrel-cage type, 2,300-volt, 3-phase, 60-cycle, 1,750-r.p.m., directly connected to the pumps. All power is furnished by the local electric light plant at a reasonable power rate.

From April 25, 1927, to May 25, 1927, a total of 4,313,600 gallons was pumped, with an average daily pumping time of five hours, and the total cost was as follows:

Operating expenses	$125.00
Cost of electricity	427.05
Total cost	$552.05

Cost per 1,000 gallons pumped equals 12.80 cents.

For removing water from fine compact or even loose fine sands or strata, it is felt that no system can produce the all-around results desired as can gravel-wall wells properly constructed and equipped for air pumping. The system has many advantages over plunger or deep-well centrifugal pumps, which may be principally enumerated as follows:

Elimination of troubles incident to care and maintenance of sucker rods and working barrels.

No moving parts to be worn away by fine sand going through the pumps.

All operating machinery can be located under one roof.

Combined efficiency of low- and high-duty pumping is higher than that of other methods if consideration is given to increased operating and maintenance cost.

Wells may be "back-blown" more efficiently.

Rate of pumping may be varied without a material reduction in efficiency.

The water is benefited by the process of aeration.

The Air-Made Well Co., of Oklahoma City, constructed the wells, and the H. L. Cannady Co., of Tulsa, Okla., was the general contractor on all pipe lines and structures. The Benham Engineering Co. acted as consulting engineers for the city and supervised all construction.

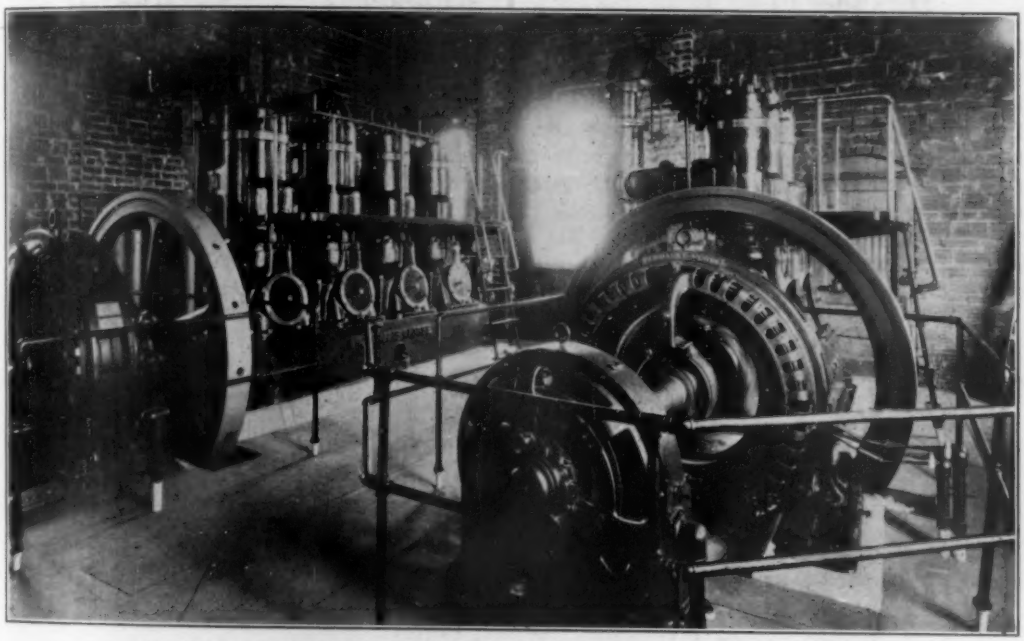
Collinsville Discards Steam in Municipal Power-Plant

Installation of Diesel Engines Reduces Operating Costs $800 per Month

BACK in 1911, when the city of Collinsville, Okla., installed its municipal power-plant, the most improved type of steam equipment then available was purchased. This equipment consisted of one unit of 125-kva., 3-phase, 60-cycle, 2,400-volt alternator, direct-connected to a single-valve steam engine, and another unit of 110-kva., 3-phase, 60-cycle, 2,400-volt alternator direct-connected to a single-valve steam engine, together with the necessary boiler equipment and accessories.

In 1917 the city found that additional power was needed, and at that time a 100-kva., 3-phase, 60-cycle, 2,300-volt, 3,600-r.p.m. turbo-alternator, direct-connected to a turbine was installed. On the turbo-alternator they had a direct-connected exciter but on the steam-engine-driven generator they had belted exciters. After the 100-kva. turbo alternator was installed, the city had a modern 6-panel switchboard, including the usual instruments, and also including an integrating watt-hour meter and a voltage regulator.

Collinsville has coal operations carried on at the outskirts of the town and is also located close to the oil fields, natural gas being available. The city has been alternating between these two fuels. With coal as fuel, they found the monthly bills averaged $2,300. Gas has been available for the past few years at 15 cents per 1,000 cubic feet, therefore the city has been using gas. With this fuel the monthly bills averaged around $700. The city's source of natural gas has been diminishing, and in addition to this, the gas has become very unreliable, containing a certain amount of water and oil. Even with the most careful operation, it was found that the operating costs were very high, and in the summer of 1926 it was decided to either improve the plant or sell out to a power company whose lines ran to the outskirts of the city. After a careful analysis of figures obtained from an outside engineering firm, they decided to install oil engines. The proposition was then put before the people and they voted by a large majority to improve the plant with oil-engine equipment.



INTERIOR OF THE MUNICIPAL POWER-PLANT AT COLLINSVILLE, OKLA.

Bids were received from several manufacturers of oil-engine equipment. Finally, two Fairbanks-Morse diesels of 120 and 240 horsepower were purchased. These engines are cooled by means of two 2-inch motor-driven

centrifugal pumps, direct-connected to 5-horsepower motors. The motor-driven centrifugal circulating water pumps are located in a pit made of concrete between the engine room and the cooling ponds. The water is pumped through the engine to a spray pond and then is used over again. The pit in which the two circulating pumps are located is lower than the bottom of the spray pond; thus water flows by gravity from the pond to the circulating pump. In this pit also are located the daily-service fuel-oil tanks for the engines and a fuel-oil unloading pump. Immediately in the rear of the power-house is a 12-000-gallon fuel-oil tank.

The city also operates a modern water system with filters of the most improved type and Fairbanks-Morse pumping equipment. At the river station there are two 4-inch centrifugal pumps with direct-connected 25-horsepower motors. These are controlled from the power-house two miles away, by automatic compensators. Each pump has a capacity of 500 gallons per minute against a 120-foot head. At the filter house, which is adjacent to the power-house, is a 3-inch centrifugal pump with a direct-connected 30-horsepower, 3,600-r.p.m. motor which pumps water from the clear well to the mains and tower tank. This pump has a capacity of 300 gallons per minute against a 220-foot head.

Power Costs

From January 1, 1925, to December 31, 1925, the city spent $18,227.79 to generate 596,352 kilowatt-hours, which means that it cost 3.1 cents to generate a kilowatt-hour. This cost of $18,227.79 is made up as follows:

Fuel "natural gas 15c per 1,000 cubic feet"	$12,281.44
Wages	5,052.50
Waste	68.57
Oil	626.39
Packing	68.01
Boiler compound	130.88
Total	$18,227.79

The city figured the load as follows:

17 white way standards, 2,000 kwh. estimate	24,000 kwh. a year
110 street lights, 2,500 kwh. estimate.	30,000 kwh. a year
City buildings, such as City Hall, churches, libraries, etc.	30,000 kwh. a year
Current for the pumping-plant	100,000 kwh. a year
Current sold to consumers and metered	212,960 kwh. a year

A steam pump was used to pump water from the filter plant to the standpipe, and it is estimated that 100,000 kilowatt-hours per year would take care of this pumping. The above figures total 496,960 kilowatt-hours, and to this the engineers added 20 per cent for line losses, making a total output of 596,352 kilowatt-hours.

The city is now showing a saving of over $800 a month over steam equipment, and this saving will be increased just as soon as the city can build up a more desirable load.

Toy City Teaches Traffic Safety

THE Bureau of Motor Vehicles, Tax Department, New York State, as a measure of safety education and a matter of general interest, exhibited during the State Fair at Syracuse in September, a miniature landscape model of a modern city with some of its typical traffic hazards in operation. The city was shown surrounded by a railroad with an electrically operated train and with stations within city and suburban limits. A tunnel had been constructed so as to show a road dipping sharply to a railroad crossing at the foot of a steep hill. Other features of the toy city, which is 24 feet long and 8 feet wide, include a waterfall, a lake, and a bridge.

The model is to be exhibited at county fairs throughout the state and will afterward be shown in New York City, according to statements made by President M. F. Loughman, State Tax Commission, and Motor Vehicle Commissioner Charles A. Harnett.

THE CITIZENS OF TOY TOWN, LIKE THE CITIZENS OF OUR TOWN, ARE SEEN CUTTING CORNERS, MAKING SHORT LEFT-HAND TURNS, TRYING TO BEAT THE TRAIN AT GRADE CROSSINGS, AND PARKING IN DANGEROUS AND INAPPROPRIATE PLACES

The Rutherford Experiment in Motion Pictures as a Community Service

By Martha Candler

THE movie house in Rutherford, N. J., is a community institution in a unique sense. If a genuinely interesting and worth-while picture with appeal to junior audiences is coming to town—and all of the most interesting and worth-while ones do come, for the people of Rutherford now demand them, the library arranges a special display table of books on the theme, the author, or the period. The Board of Education permits circulars to be distributed in the schools — a practice never sanctioned for any other purpose, and the churches and the library permit circulars to be bulletined. Representatives of every organization of importance "press agent" the show. The newspapers carry features about it. The result of all this is that when the time comes the movie house is crowded with a representative community audience.

There is a large and intelligent following of regular movie fans in Rutherford. There is an audience for "exceptional" films sufficient, in the opinion of some of the local leaders, to justify the organization of a "little theater" for films as a part of the community-movie program, though no such move is planned at present. Finally, and perhaps most important, the problem of the child and the movie show has been worked out in a way highly satisfactory to parents and so attractive to the children themselves that the Saturday afternoon matinee with its regular "s'prise" feature is a focusing point for youthful anticipation throughout the week.

These are a few of the results of a laboratory experiment in motion pictures as a community service. The experiment works this way because no one interested in it, except the exhibitor, has anything to sell, or anything to gain further than the social welfare of the home town. No one, for that matter, even accepts free passes to the movies.

The "Rutherford experiment" is carried on under a Better Films Committee, organized four years ago and now, in reality, a sizable group of interrelated committees made up of representatives of 34 organizations and with an individual membership as well. It is beginning to attract widespread attention, judging from the inquiries from various parts of the country from communities that want to go and do likewise. Almost all of the inquirers, according to Mrs. H. G. Grover, report mass meetings held to discuss the low-grade films being shown in their local theaters. Mrs. Grover is the originator and President of the Better Films Committee—and without her tireless efforts and endless resourcefulness its achievements would have been impossible. Here is the Rutherford story as she told it to the writer, for the benefit of THE AMERICAN CITY's readers:

"Four years ago we had an indignation meeting. Representatives of many civic organizations

East and West Have the Same Idea

The idea of week-end family programs similar to those of Rutherford has been introduced in Southern California, where it is proving popular, according to an article by Mrs. John Vruwink, Chairman of the Junior Matinee Committee, California Federation of Women's Clubs, in the August 1 issue of "The Motion Picture." Mrs. Vruwink describes monthly conferences of the motion picture department, California Federation of Women's Clubs, Los Angeles District, attended by film chairmen of as many as 89 organizations, including Women's University Clubs, Parent-Teacher groups, D. A. R. chapters, W. C. T. U. units, etc. Lists of family program pictures approved by a pre-view committee are distributed at each conference, taken back to the different groups, hundreds of copies being made in many cases, and distributed to individual members. Lists also go to two other districts of California, where they are copied and sent to county chairmen. These lists are posted on club bulletin boards and in neighborhood libraries and sent to schools, churches and other places, and to film producers and exchanges. Many of the latter are reported to be using salesmen to go into outlying towns and interest managers in the week-end program idea. For a more complete description of the working-out of the plan, readers may communicate with the Motion Picture Producers and Distributors of America, Inc., 469 Fifth Avenue, New York, which organization will supply copies of the above-mentioned bulletin containing Mrs. Vruwink's article.

came to see what could be done about the awfulness of films shown in Rutherford. Unfortunately, none of these good people so interested and so sincere, had a single practical suggestion, What everyone seemed to want was better programs over the week-end. The manager was brought before us, and promised to try to do better. And the whole matter died."

But Mrs. Grover headed a little group who were unwilling to let the matter stay dead. Backed by the Parent-Teacher Association and one or two other organizations, they started out to make investigations and try to find some solution of the problem. They conceived the Weekly Photoplay Guide, as a regular department of the local paper, giving advance information about worth-while local bookings. They made contact with the National Board of Review and organized a study club to attend pre-showings of films and learn to write sound criticisms of them. They booked speakers from the best available sources. They established a friendly understanding with the exhibitor and convinced him that better films mean better business. Always, they emphasized the idea of family week-end programs.

"His interest increased when the Committee continued to give public endorsement to the selected pictures he showed and to boost exceptional plays in quarters he had never been able to reach. Finally I discovered when I went to his office to get lists of bookings, that he was comparing his advance programs with the National Board of Review photoplay guides and checking 'selected' pictures. He began voluntarily switching inferior films from week-ends to the first of the week. Even during that first year, we got a good audience for 'Abraham Lincoln,' so that when we requested 'Peter Pan' we got it—and crowded the house, which seats 1,800!

"The second year, the whole town began to notice the Better Films Committee. We had a fast-growing membership, gradually representing more important organizations. The study club did excellent work. The Photoplay Guide had become an established part of the community news. We talked week-end programs harder than ever, and finally we got them. Rutherford didn't want Saturday morning movies. The sentiment was for programs of interest to the whole family. When we finally tried these out for three week-ends and a holiday, everybody was jubilant over the results. We packed the house for a request matinee. We helped local organizations get special programs. Then we planned an experimental month of week-end programs with the special 15-cent Saturday afternoon matinee for young people. We were certain of the manager's cooperation, and we felt responsible for making the trial a financial success for him. We did. We used a lot of ingenuity in handbills and other advertising. It was a great success, and has been ever since, and we are all very happy working together in a common interest.

Every junior matinee program, which is the regular week-end bill, with some special attractions, is passed upon by the Committee before it is shown. The program is so arranged that smaller children may be taken away after the first feature if they become too tired—but they never do. In addition to the strictly first-class and appropriate programs of films, each matinee throughout the season from October to May offers a party—some volunteer local-talent attraction of juvenile appeal which is kept strictly secret until the time arrives.

"Friday evening and Saturday evening are community nights. The manager as well as the Committee feel that the week-end programs are in Rutherford to stay. All feel that there is a definite new demand for higher-class films which has come about through education. During the nine months of the past year from September, 1926, to June, 1927, 180 films were shown at the Rivoli, our motion picture house. One hundred and seventeen of these were selected, and fell into the following groups—45 for general audiences, 46 for family audiences, 10 for mature audiences only, and 16 exceptional photoplays; 63 unselected programs were shown. There is no recipe for developing such a program. It takes endless patience, endless work, and the right attitude toward the manager. We had to persuade him to let us boost his theater because of superior films shown there. We had to show him that we represented the public, and were not a few persons expressing our pet prejudices. We feel that much of our strength is due to our having the National Board of Review and the Council behind us to go to when problems arise."

The Rutherford Committee is the model Better Films organization of the National Board of Review, in that it carries out all recommendations for a community motion picture body outlined by that Board, and some others besides; and for more than a year Mrs. Grover has been a member of the National Board of Review, and of its Council.

Rapacious Exhibitors Exploit Childhood in Chicago "Opportunity Nights"

Sharply in contrast with the Rutherford idea is a grim account of "Juvenile Revues," "Super-Discovery Nights," "Kiddie Parties," and "Kiddie Barrels of Fun," given by F. Zita Youmans in the September issue of *The Survey*, Graphic Number, under the title of "Opportunity Night." This account will challenge the interest of parents in large cities where, as in Chicago (to quote Miss Youmans), "commercial interest has seized upon childhood as a source of financial gain in exploited child performers and child audiences," and where "in both instances, every accepted standard of education and training is thrown to the wind."

Snow Removal and Snow-Removal Equipment

From the 1927 Report of the Committee on Maintenance of the Highway Research Board

"OPEN roads for winter traffic" have grown considerably in popularity and activity in the last few years. Enthusiasm for winter maintenance has increased to the stage, as judged from extended observations, where the taxpayers demand open roads the year round regardless of the cost, and will have snow removed from their main highways even if the funds required for that purpose curtail their summer road-construction program. Highway officials of the thirty-six snow states have reported to the Bureau of Public Roads that 62,165 miles of highways were kept clear of snow during the winter of 1924-25 by their maintenance departments, with $1,826,800 expended for the work; and also that for the winter of 1925-26 the roads cleared were increased to 93,000 miles, with $3,757,660 expended. This shows a tangible increase in terms of miles cleared, of approximately 50 per cent. The same officials report a program of open roads for the winter of 1926-27 aggregating 92,765 miles, with data for county programs omitted in some instances.

A LA PLANT-CHOATE ALL-STEEL TRACTOR SNOW-PLOW CLEARING A MICHIGAN ROAD

At the close of the calendar year 1925, or during the winter under discussion, approximately 376,575 miles of paved rural roads were in place, both on and off the state systems, extending over the thirty-six snow states; and 16,139,859 motor vehicles were under registration in the same territory. This motor-vehicle registration for the snow states represents 66 per cent of all motor vehicles registered over the surface of the globe. The cost of the improved road mileage is not available, but it is known that over the snow states during the five years, 1921 to 1925, inclusive, 3¼ billion dollars were expended on highway improvement and maintenance; and it has been estimated that on January 1, 1926, there were nearly three-quarters of a billion dollars available for construction and maintenance of rural roads over the snow territory for the calendar year 1926. It is also known that the motor vehicles registered over the snow area carry a purchase cost of 14½ billion dollars and require for their upkeep, tires, garage and fuel an amount aggregating 4 billion dollars an-

SARGENT SNOW-PLOW MOUNTED ON CRAWLER TYPE TRACTOR OPENING UP A SNOWBOUND ROAD

nually. With the vast sum expended in paved roads and the staggering cost of their motor vehicles, the taxpayers and traveling public definitely realize that the interest on the investment for highway improvement and on the purchase cost of motor vehicles is going on during the entire year, and are demanding greater mileage of open roads during each successive winter. It is apparent that snow removal from rural highways is not a passing fad, but a well-established business, along with the improvement of highways and the manufacture of motor vehicles. It is also apparent that the work will not have become stabilized until the majority of paved roads and their connecting links are kept open for winter traffic, in order that the vast system of paved highways and the numerous motor vehicles throughout the snow regions may benefit the public as much as do those in other sections of the country.

Benefits of Open Roads in Winter

The benefits derived from open roads during all the year are numerous and cover many fields of activity. With open roads maintained during the snow season, protection from fire is afforded throughout the year; the physician can visit his patient with necessary frequency, and the rural general merchant can keep his store stocked with merchandise at a minimum carrying expense. The United States Post Office Department has supplied the information that 31,600 rural free delivery vehicles use 869,390 miles of roads yearly over the 36 snow states and serve 21,296,400 patrons. All-year open roads prevent interruption in this flow of mail and, last but surely not least, render possible winter attendance at the centralized schools scattered over the snow states.

An official of the United States Bureau of Education has supplied the information through a printed publication that during the school season of 1925-26 more than 585,000 pupils were transported over rural roads to 4,300 consolidated schools located in 8 of the snow states, at an expense of $15,800,000; and it is estimated that proportionate figures may be considered for the remaining states in the heavy snowfall area. The official states that "the best welfare of the school depends to such an extent on good attendance that every effort must be made to get the children to school regularly and in the best possible manner." The attendance at these schools is bound to be interrupted over the snow states unless the rural roads are kept free of snow blockades during the winter months, and for this reason, if for no other, snow removal is justifiable to the extent that will make possible the convenient attainment of an education by all children living in the heavy snowfall area of the land.

Actual Depth of Snowfall

Winter maintenance organizations have heavy snows to contend with at times, but the depth of individual snowfalls is often greatly exaggerated. After a storm, with the immediate landscape covered, it is concluded that 8, 10, or 12 inches of snow has fallen, while, as a matter of fact, probably less than half of the estimated depth actually exists. From a study of U. S. Weather Bureau records compiled from twelve Weather Bureau stations scattered over the eastern United States in the heavy snowfall area, without paying any attention to snowfalls of less than two inches, it is learned that by far the greater number of storms deposit snow between two and three inches deep or between three and five inches deep; there are few snowfalls between five and seven inches, and storms with resultant snowfalls of seven to nine inches or more are comparatively

infrequent. During the four seasons studied, 33 per cent of the storms deposited snow two to three inches deep; 29 per cent deposited snow three to five inches deep; 22 per cent deposited snow five to seven inches deep; 8 per cent, seven to nine inches deep, and 8 per cent. greater than nine inches deep. The stations from which these data were compiled were selected more or less at random, but care was employed to avoid mountainous regions. Numerous snowfalls occur less than 2 inches deep, but they are omitted for clearness of comparison.

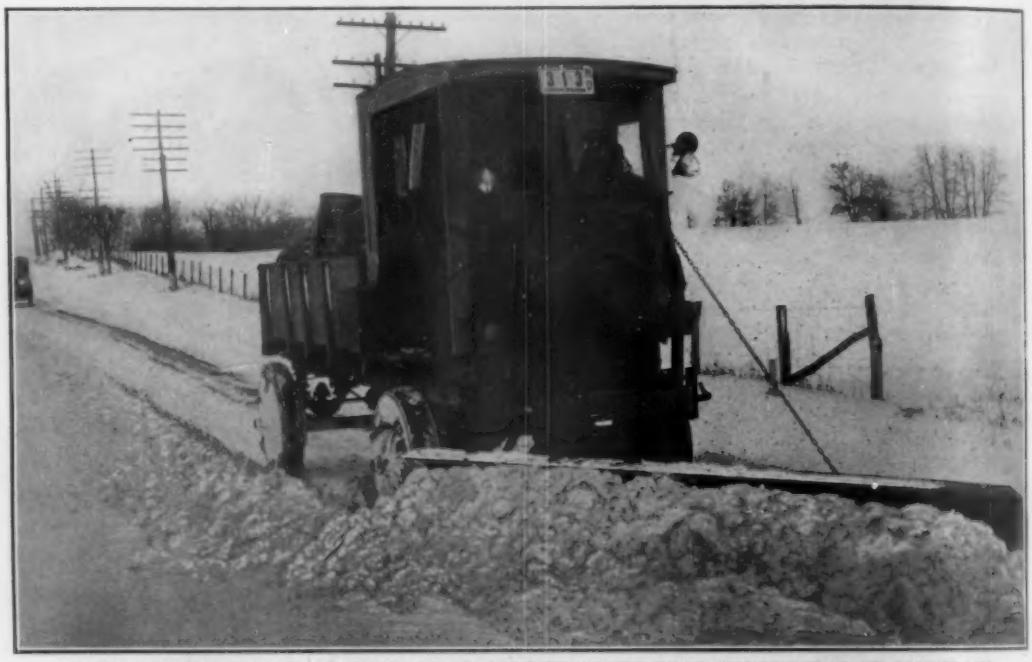
Drift Prevention

If snow would lie as it falls, little effort generally would be necessary to remove it from the roadbeds and keep arterial and lateral highways open the year round for the ever increasing wheel traffic. With snow falling but rarely to depths greater than nine inches in individual storms in non-mountainous regions, if it spread uniformly on field and road and remained in that laminated state, the only equipment necessary for its removal or displacement would be the simply constructed and low-priced straight-blade or "V" plow, used in connection with trucks with an approximate speed of 15 miles per hour; or, in numerous instances, none other than the ordinary maintenance equipment, including road graders and trucks. But, unfortunately, snowfall is usually accompanied by high winds that buffet the light snow crystals about, and where obstacles along the highways break the wind currents, cause drifts to form on the traveled way. These obstacles break the force of the wind, reduce its velocity, and form pockets of still air to the lee of the obstacles, which permit the snowflakes to fall and remain undisturbed. When obstacles exist adjacent to or within the right of way, pockets form over the roadbed and cause snowdrifts that interfere with all kinds of traffic; but where obstacles are met at greater distance from the road, the pockets of still air collect the loose and falling snow and protect the traveled way from drifts. Hedges near the roadway, tight or partially tight fences and, in some localities, plank guard-rails, often produce drifting, and quite frequently standing weeds and other vegetation cause the same trouble. Natural obstacles, such as field division fences extending parallel to the road, and also tree stumps, shrubs, bushes, standing timber, and, in the corn belt, cornstalks left uncut during the winter months, when sufficiently far from the road lines, tend to break the force of the wind and keep the traveled way free from drifts.

Obviously, in preparing a road for the winter period, all conditions that tend to cause drifts should be eliminated where possible, and the beneficial wind barriers should be maintained

SNOW REMOVAL IN MARCH, 1927, AT ATTICA WITH A HADFIELD-PENFIELD ONE-MAN GRADER

and augmented to the fullest extent. A study of the road should be made, and where snow usually piles up, all weeds and other vegetation should be cut and removed from the right of way; tight board fences should be replaced with wire fences where fences are necessary, and cable guard-rail should be installed as soon as feasible at sections of road where the plank type is troublesome. Topographical and other natural features that intercept air currents and prevent drifting in the roadway require no attention, but where these are absent, studies must be made of the sections subject to drifting and artificial structures erected. These should be placed so as to form artificial eddies on the windward side of the section of road to be protected and at a sufficient distance therefrom to permit the blowing snow to be deposited between the structures and the road. For convenience, such structures are termed snow-fences.



A CHAMPION BLADE TYPE PLOW USED BY THE STATE ROAD COMMISSION OF MARYLAND

Snow-fences of one kind or another are used in all sections where snowdrifts are apt to form, and without exception this method of prevention is favorably reported by all officials interested. To be most effective, the fences should be set perpendicular to the general sweep of the wind. In different localities, the direction of the storms varies, on account of local topography, closeness of moisture-bearing conditions, and other causes; but for individual localities snowstorms in season may be expected from the same general direction. This uniformity of wind direction simplifies the selection of snow-fence placements; provided snow drifts along a road at certain sections during one storm, it will be quite likely to drift at the same places during the next and succeeding storms, and in a similar manner. To locate these drift-laden sections of highways, and to study the prevalent direction of wind and the topography in close proximity to the traveled way, are the main problems in the control of snow adjacent to rural roads. For convenience the fence is usually erected on a line parallel to the road, but in some instances it is placed oblique to the road but perpendicular to the wind sweep. Where the fence is parallel to the road, one line is usually sufficient, but in some cases two lines are installed.

Classes of Roads to Be Maintained Snow-free

With varied interests to contend with and the extensive traffic to satisfy that now utilizes our rural roads during the winter months—or at least uses them when they are kept clear—it is apparent that effectual programs covering "open roads for winter traffic" must include all classes of highways; not only through routes and arterial highways must be considered, but county and township roads as well. Interurban routes or lanes of travel extending to adjacent states are surely important for winter maintenance, but fully as important are the roads connecting county-seats and others radiating from the towns and villages. Pro-

vided the through routes alone were kept open, while they would prove very beneficial to intercity and adjoining state traffic, they would be of comparatively little use to the side-road dwellers, who probably pay considerable of the cost. To benefit all proportionately, the intersecting county roads must also be kept open and lateral or township roads as well. Each year the taxpayers are clamoring for more extensive programs, and it is only a matter of a few years, undoubtedly, when all paved roads in the United States over the snow area, and their connecting sections, will be kept open for year-round traffic; but until that period arrives, the roads for winter maintenance must be selected that will benefit the greatest number of those concerned, and also be consistent with the funds available for that purpose and the snow-removal equipment at hand. The main or intercity highways to be selected for winter maintenance can be determined from the amount and nature of traffic using them during the other seasons of the year. With the possible exception of tourist travel, provided a road is used to a considerable extent during the summer, it will have heavy traffic during the winter if the roadway is open and serviceable. For inter-county and lateral roads, the density of population over the territory to be served must be given consideration; also, the absence of adequate railroad facilities; whether horse-drawn or motor vehicles predominate in using the roads; the location of consolidated schools for easy transportation of pupils; rural free delivery accommodation; and sources of medical aid. In selecting arterial highways radiating from the cities or villages, the controlling features appear to be: convenience for milk delivery; export of supplies for rural communities; transportation of stock from wholesale centers to rural merchants; and aid granted bus companies in localities where that kind of rural-urban travel is in use.

Equipment

Equipment used in the removal and disposal of snow for the convenience of winter traffic remains essentially the same as that employed during recent winters. The straight-blade and the medium-size "V"-shape plows are used quite extensively when mounted on trucks for keeping roads open, especially where the work is started shortly after the beginning of the storm and is persistently followed until the snowfall stops and the road is cleared. For heavier work, in opening drifted or packed sections of roadway, or for widening cuts already made, the more powerful displacement plows with tractors are utilized, or the different types of rotary plows are employed for the same purpose. While some engineers in the heavy snowfall areas believe the tractor-plow best adapted for opening roads during and following storms, the majority in both light and heavy snowfall sections believe the straight-blade and "V"-shaped truck-plows the more efficient and economical for quick work. The heavy tractor-plows are capable of opening roads for winter traffic, but the lighter high-speed truck-plows can keep the roads open during storms, which is the result desired. The officials of a county in the Upper Peninsula of Michigan, with an average annual snowfall of 99 inches, believe the truck-plow the more efficient for winter maintenance. This county maintains a winter program of 125 miles of state and county roads. To keep 15 miles of the program open during storms and to open the remainder after the storms are over, two truck units are employed—one straight-blade plow and one "V"-shaped plow, both 36 inches high, which travel through ordinary depths of snow at the rate of 10 miles per hour and clear wide traveled ways quickly and cheaply. The cuts made are later broadened for the disposal of future snowfalls with rotaries and other tractor plows. A county engineer in central New York, a locality with considerable snow, has given snow removal careful study, and believes that light "V" plows employed with trucks are the most satisfactory for opening preliminary cuts during storms. The trucks carry "V" plows in front, and also, attached to one side or the other, auxiliary wings to widen cuts.

The Minnesota Highway Department and also certain counties in that state use the lighter type of equipment in their snow-removal activities. For some localities, however, the trucks are employed in tandem formation; the forward trucks carry "V" plows and the rear trucks have wings attached to their right sides. These outfits are capable of traveling 12 miles per hour clearing 12 inches of snow. Ramsey County, Minnesota, employs three outfits similar to those just described. Last winter the effect of a recent storm was noted where these three plow units had cleared the county's entire 256 miles of snow program in three days to a generous width.

Fast Outfits for Heavy Snowfall

The engineers in the localities with truck-plows in operation contend that it takes a fast-moving snow-removal outfit to keep ahead of a heavy snowfall, and that storms are seldom experienced of such violence as to snow-in a truck-plow unit, provided the truck is in suitable condition and the personnel efficient. They also report that trucks with plow mounts can

travel at high speed while clearing an ordinary snowfall between drifts and then buck the deeper drifts, but a tractor can maintain but a comparatively slow speed, even with little or no snow encountered between the deeper sections. Also, for tractors of the crawler type, long cleats are essential to provide traction, necessitating travel under low-speed gear, which uses up considerable motor fuel. Nearly all the state officials in the heavy snowfall area of the country report that newly fallen snow to a depth of 9 inches, and recently drifted but not packed or crusted snow to a depth of 36 inches over short sections, can be efficiently moved with truck-plows; and the records of the United States Weather Bureau supply the information that snow falling to a depth greater than 9 inches is of rare occurrence, and to those storms that leave a fall greater than that depth, but very few occur within separate 24-hour periods. From these facts it appears that the problem of "open roads for winter traffic" at minimum expense may be solved to a greater or less extent by the effectual use of snow-fences and other methods of drift prevention at locations determined after careful surveys, and the employment of as numerous a fleet of the lighter type of plows as the trucks available will permit. The equipment should be placed in action by a carefully selected and efficient personnel at the beginning of each storm, or shortly thereafter, and kept constantly employed in succeeding shifts until the entire program adopted is opened and made passable for all types of winter traffic and in the least time possible.

Heavier Equipment Also Necessary

It is not intended to imply that the heavier type of snow-removal equipment is not highly efficient and absolutely necessary for winter road maintenance. The heavier displacement plows, as well as the different types of rotaries, are surely essential during emergency storms for clearing the initial cuts and are considered indispensable for widening cuts formerly made with any type of plow whatever; also for the opening of roads in the spring that were not deemed of sufficient importance for inclusion in the regular winter program. The plant of Marquette County, in northern Michigan, includes along with other heavy equipment a displacement plow of sturdy build. The plow is supported on runners, and is dragged while clearing a road instead of being mounted on a tractor, which is usually the case. The plow is hauled by two Army tractors, and thus equipped can travel at the rate of approximately five miles per hour. The larger wings in the rear carry dimensions of about 7 feet high by 8 feet wide and when spread can clear a pass 30 feet wide.

There are at least two types of rotary plow manufactured or designed for use in the snow states: the lateral type, with the rotors revolving parallel with the line of travel; and the front type, with the rotors revolving perpendicular to the axis of the plow. Both types are mounted on heavy tractors, but the lateral type depends upon the power supplied by the tractor to revolve the rotors, while the other type, at least of the latest design, carries two auxiliary motors, one on either side to revolve the respective rotors.

Personnel and Cost of Snow Removal

The relative cost of snow removal has been given considerable study, but because of the numerous variable conditions encountered in the work, reliable data on the subject have not yet been reported or determined. One of the many controlling features necessary for consideration in attempting to arrive at cost data to cover work of this nature is the relative efficiency of the different personnels to be engaged; whether experienced, firmly knit organizations are proposed or those hastily assembled without former training. Also, whether or not adequate and suitable equipment is at hand is an item of no small importance. The frequency, general direction, and strength of the prevailing windstorms are also important factors that must be given consideration in the attempt to compile snow-removal cost. One county or area of a state may be in such a topographical position as to be protected from heavy winds, or its main roads may extend parallel with the general direction of the wind, which would preclude drifting and keep the cost of snow removal at the minimum; while another county or area may be situated in more open country, its main roads extending perpendicularly with the general wind direction, causing consequent drifting and a resultant increase in the cost of snow removal. Whether the snow removal is moist or dry, and the temperature of the atmosphere during the storms, are other factors to study. We have shown that storms, even in the heavy snowfall regions, rarely reach depths greater than between two and nine inches. For snowfalls of such depths, with the snow falling dry, little difficulty should be experienced in keeping a traveled way open with the machinery now in vogue, and with a trained personnel; but with the snow falling in a moist state, greater efforts would be required for its disposal, with resultant higher costs; also, if the snow falls moist during a comparatively high temperature, and freezing temperature prevails

BAKER V-TYPE SNOW-PLOW USED BY GRATIOT COUNTY, MICHIGAN

before removal is accomplished, the cost of clearing the turnpike will naturally be increased. Efforts have been made to arrive at relative costs of snow removal per inch-mile, with varying results. For instance, if snow falls to a depth of seven inches without wind, during its fall or immediately afterward, and its removal is attacked before the snow has become settled or packed by traffic, the cost of removal would be comparatively little. If, however, such a blanket of snow is left on the roadbed until it has become crusted or unevenly packed by traffic, or prevailing winds have caused it to drift badly, the cost for its removal per inch-mile will be considerably increased.

EDITORIAL NOTE.—The photographs in this article were selected to illustrate various types of snow-removal equipment, but are not the ones used in the report of the Committee on Maintenance of the Highway Research Board.

New Brunswick Has Industrial Secretary as Part of City Government

SINCE January 1, 1925, Comptroller J. H. Whitfield of the city of New Brunswick, N. J., has acted as Industrial Secretary of the city, by authority of the City Commission. The aim of the Secretary is to bring new industries to the city, to cooperate with those which are already established, and to secure favorable publicity for the city. He also stands ready to cooperate with civic organizations, and takes an active part in matters such as legislation pertaining to the city, celebrations, and the problem of providing municipal improvements needed by manufacturers. Within the past two years 26 new industries have come to New Brunswick, with new capital amounting to one million dollars, and furnishing employment to about 1,500 people with an annual payroll of $1,500,000. The Industrial Secretary has issued 5,000 copies of an 80-page booklet setting forth the advantages of New Brunswick as an industrial center and containing photographs and information regarding the industries already in this central New Jersey city.

The Recent Convention of the International Association of Municipal Electricians

THE thirty-second annual convention of the International Association of Municipal Electricians, held in Salt Lake City August 16-19, was well attended. Papers of unusual interest pertaining to municipal electrical work were read and discussed by experts. The exhibits were very elaborate and showed fire-alarm, police-signal, and traffice-control equipment, as well as street-lighting displays and various types of cables.

David Reed, Superintendent of Fire-Alarm, Denver, Colo., was elected President; Charles K. Ahearn, of Waterbury, Conn., Vice-President; Harold N. Lang, of Orlando, Fla., Secretary; Walter Dilzell, of New Orleans, La., Treasurer; and Frank K. Shinnen, of Atlantic City, N. J., Chairman of the Executive Committee.

New Orleans was selected as the next meeting-place.

The Problem of Waste Disposal in a Small City

By Arthur Boniface
Village Engineer, Scarsdale, N. Y.

APPEARING on the front page of a newspaper recently, was this significant headline: "Manhattan Will Be Dead City at Night in Five Years." This means that the exodus of people from cities is concentrating on adjacent territory all the functions of government that are necessary in the cities themselves, and the problems of suburban communities are becoming keener in consequence. Particularly is this true of waste collection and disposal.

In reviewing the treatment of this problem in the past, we find Europe studied it quite seriously, and as a result has developed means of disposal of its wastes both economical and highly sanitary. More recently, America, with her centers of population growing ever denser, and the matter of health receiving more and more attention, has scientifically attacked the waste problem. The cities took it up as a matter of self-preservation. Here was pestilential matter, and in order to conserve the health of the people, their wastes had to be removed and destroyed.

After much experimenting and trial, America now has methods of waste disposal developed along practical and scientific lines, which are accepted as standards and which therefore remove a source of danger and incidentally promote cleanliness.

The small communities are only now seriously bestirring themselves in the effort to establish proper means of caring for their wastes. Heretofore, it was not difficult for towns and villages, with their large areas sparsely settled, to get rid of their waste, but as the exodus from cities proceeded, the territory within fifteen to twenty miles of the large cities began to build up, until finally the problem of waste disposal in the new communities became as acute as that developed in the long-established cities.

The object of this discussion is to assist, if possible, those who are charged with the responsibility of removing and disposing of waste from the small city or residential community, where the service demanded is apt to be of an exacting character.

The requirements for a community of this description include uniformity and high quality in service performed, and intelligent supervision and control over both collection and disposal, so as to render such service in as economical and sanitary a manner as possible.

Methods

The generally accepted methods of waste disposal are feeding to hogs, incineration, reduction, and dumping and burial.

In the high-class residential community, we cannot choose feeding to hogs as our means of disposal; neither can we maintain a dump for the burial of waste, as such methods are obviously unsuitable where so many fine homes exist.

Similarly, the operation of an incinerator plant is liable to be declared a nuisance, either from the emission of odors, or from its faculty of scattering dust and other objectionable matter over the neighborhood, as was done quite recently in a Hudson River village. Moreover, an incinerator plant cannot be made an object of beauty; its huge smokestack prevents this.

Reduction, as an economical means of disposal, can be resorted to only where huge quantities of waste are produced; therefore, such a method is confined to the big cities.

Thus, it will be realized, no easy problem lies ahead of the one on whom rests the choice of the manner of disposal in the small city or village.

Now let us look briefly over the conditions usually found in the small city or community prior to the local government's assuming responsibility for waste disposal, and as a concrete example let us refer to the village and town of Scarsdale, N. Y.

Conditions in Scarsdale

This municipality is located seven miles north of the northerly line of New York City and embraces a territory of approximately seven square miles, with over sixty miles of streets, and a population of 7,000. Its Waste Department was established in 1923. During the previous year, a canvass was made by means of return postals sent to every householder, on which specific questions were asked.

The information elicited showed that 52 per cent of the householders paid for waste re-

moval by twelve different private collectors, and 48 per cent cared for and disposed of their own refuse. The private collectors were charging from $1 to $15 per month, based on the character of service rendered and quantity of waste removed. It was indicated by those who were being served by private collectors that the municipality should assume responsibility for the removal of all wastes. Those who were caring for their own desired to continue doing so. It was also brought out by the canvass that the private service was irregular, indifferent and seriously in need of control. It was known from complaints received by the governing authorities that combustible waste was being strewn along the public highways and private driveways, and their attention was directed to the slovenly and untidy habits of the private collectors; but the difficulty was to regulate and control so many different scavengers.

Contemporaneous with the investigation conducted on its own behalf, the village officials of Scarsdale visited twenty-three different cities, towns and villages in the vicinity, and attempted to estimate the success of the individual methods employed therein. The surprising thing encountered was the almost universal lack of reliable information regarding the amount of waste produced and other facts pertinent to the service being rendered.

Having collected all the information it could both within and without its confines, Scarsdale proceeded to analyze the facts before it.

Let us consider the problem facing Scarsdale in 1923. There were 1,200 houses, located over an area of approximately 7 square miles, 300 of the residences having entrance drives at least 200 feet long. Two ash-dumps were available, which required a haul of approximately one mile.

The location chosen for the garbage plant and for the combustible rubbish burner indicated an average haul of about 1½ miles from the five districts into which the village was divided.

The service to be rendered included cellar collection, in response to the public demand, although the judgment of those establishing the service was against this part of the program.

Collection Service

The extent of the service provided for three garbage, two ash and one rubbish collection per week. In due course the service was inaugurated with two 2-ton G.M.C. trucks for ashes, two 1-ton Reo Speedwagons for garbage, and one 1-ton Ford with 7½-yard body for rubbish collection. The force consisted of a superintendent, five drivers and eleven laborers on trucks, two laborers at the garbage plant, and one laborer at the rubbish incinerator. From accurate records kept, it was found that the average amount of waste collected per capita per day during the first six months of operation was 4.33 pounds of ashes and rubbish and 1.05 pounds of garbage.

At the end of six months the equipment was augmented by a 1-ton Ford car to be used for special service. This service consisted of sending to houses and picking up the waste skipped by the regular trucks the day previous, where entrance could not be gained at the daily scheduled time. This arrangement, still continued, is appreciated highly by the householders and results in much favorable comment from citizens.

The cellar collection, which includes chiefly ashes and rubbish, in order to be efficiently handled is operated as follows: Two laborers precede the coming of the trucks on the street to be served. They enter the cellars on one side of the street and bring the cans or barrels to the curb. The truck arrives in due course and the crew empties the receptacles standing at the curb, and returns them to the cellars. This operation continues up one side of the street and then down the other, and works very satisfactorily with little waste of time.

Records are valuable if conscientiously kept, and when intelligently analyzed often entirely change policies originally inaugurated. Scarsdale did not hesitate to make improvements from the experience gained, and has changed the type of equipment to the lighter kind, for the reason that it is more economical in upkeep and less damaging to driveways of residences.

Disposal Methods

The method of disposal of its organic waste was long considered, as it must be remembered that where fine residential homes form the major part of a community, it is difficult to locate a disposal plant that will not have a deleterious effect on property values within its vicinity. It was for this reason that the Beccari system of disposal by fermentation was chosen.

The construction of a Beccari plant usually consists of a block or series of concrete cells, 10 feet square and 9 feet high, with 3-foot square hatch at top for charging, and a 3- x 5-foot door on the side for discharging the residue. The floor consists of concrete gratings designed to admit air from below, which is conducted through two small portholes on the side of the cell. Above the cell is the turret, constructed with horizontal baffles, on which clay and crystals of sulphate of iron are placed

for the purpose of fixing the nitrogenous gases as they arise from the fermenting mass below.

After charging a cell with organic matter, it is closed and the only air admitted is through the two portholes below the level of the floor gratings. In about twenty days the temperature of the mass has risen to 160° F. or thereabouts, which it retains for about a week, then drops off gradually, so that at the end of the cycle, which is reached in approximately 50 days, the temperature is around 130° F.

The analysis of the humus produced in the Scarsdale plant showed:

	Per Cent
Nitrogen	3.0
Phosphoric acid	3.5
Potash	0.6
Moisture	45.0

This was gratifying with the exception of the last item—moisture, which was much too great to permit the grinding and sacking for market purposes. Moreover, the discharge of a cell was accompanied by the release of gases that were decidedly unpleasant.

It is not the purpose of these notes to discuss this means of garbage disposal except to say that subsequent observations showed that, as then being operated, the mass never properly transformed, because raw American garbage is so highly charged with moisture that the bacterial colonies, so vital to correct operation, do not develop as they should; also because the design of the cell is such that a load is developed of 300 pounds to the square foot on the floor area, which effects so dense a mass that the oxygen reaches but a small portion of it and, consequently, aerobic action is practically impossible and the material fails to oxidize.

The new design of cells and the apparatus that has been installed at the Scardale plant are expected to correct the perturbing conditions referred to; and if they do, a method of disposal ideally suitable and economical will be available to all communities of the type of Scarsdale.

In May, 1926, it was considered expedient to close the Beccari plant temporarily, in order to meet difficulties that had arisen in its operation, and also to inaugurate certain ideals developed from personal observations made at the Beccari plant in Florence, Italy, the city where this system of disposal originated. This move necessitated changes in regulation, so that, instead of having separate containers for garbage and for rubbish, these wastes had to be mixed and so collected. An arrangement was made with the town of Eastchester whereby all mixed waste is disposed of in its incinerator. This has been found a practical substitute and of great assistance during the temporary shutdown of the Scarsdale plant.

As organized today, the municipally operated Waste Department of Scarsdale is rendering a high-class service, dependable, thorough and well regulated. In three years the Department has filled and reclaimed a six-acre tract of land, now devoted to playground purposes, and all other promiscuous dumps have disappeared, thus effecting a better appearance throughout the village generally.

In order that comparison may be made between the organization at its inception and that of today, there is given below a summary of its operation and details of equipment for the twelve months ending February 28, 1927:

POPULATION, 7,000; HOUSES, 1,800

Equipment:
- 3 1-ton speedsters
- 5 1-ton Fords
- 1 1-ton Ford—special service car
- Note: 2 old trucks held in reserve for emergency purpose

Personnel:
- 1 superintendent
- 1 mechanic
- 8 drivers (assistant in loading their trucks)
- 15 laborers

Collections:

Ashes
- Winter—2 collections per week
- Summer—1 collection per week

Mixed Waste
- All-year—3 collections per week
- Note: 13 apartment and boarding-houses are given a daily service throughout the year.

Disposal:

Ashes
- Two dumps; average haul, one mile

Mixed Waste
- Eastchester incinerator; average haul, two miles

Quantity collected (twelve months):

Ashes
- Tons, 5,897; pounds per capita per day, 4.61

Mixed Waste
- Tons, 2,110; pounds per capita per day, 1.65

Special Trips:
- Trips made by Ford Special Car—97 in number

Inasmuch as costs are only relative, being different in every part of the country, they are omitted. It is hoped, however, that the facts and figures given will form an interesting comparative basis for those struggling with the problem of waste disposal.

ACKNOWLEDGMENT.—From a paper read before the Public Service Institute, Cambridge, Mass.

Quote from The American City

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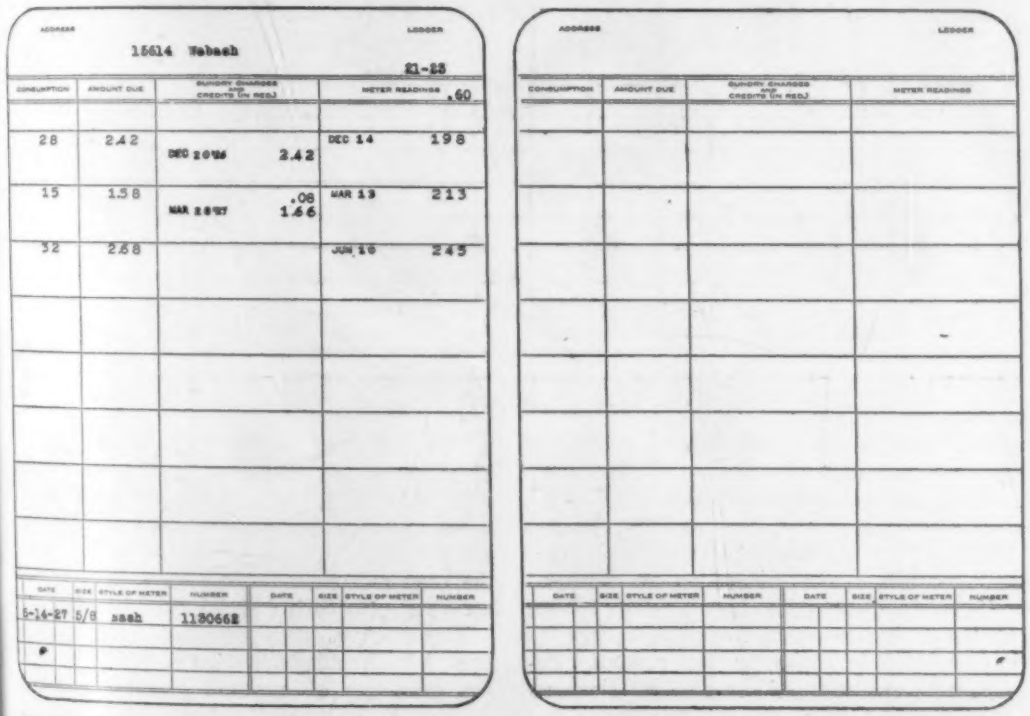
Application of Machines for Water Consumers' Accounting Problems

By D. C. Grobbel

Chief Clerk, Board of Water Commissioners, Detroit, Mich.

WITH the many improvements in methods made in the production and conservation of water, there has likewise been felt among water-works executives the necessity of improved accounting methods, especially in that branch of the office work called the Consumers' Accounting. This need is felt not only in privately owned works, but also in those water-works owned by the municipality. True, privately owned works have, as a general rule, been operating for some years under the public utility commissions and have been conforming with the utility commission uniform system of accounts, and have been compelled by law to provide the utility commission with certain accounting information which could be secured only by the use of improved and efficient accounting methods. For this reason, privately owned works were more prompt in studying and setting-up improved systems of customer accounting. On the other hand, in the great majority of states, the utility commissions have by statute been prohibited from interfering in the supervision of municipal utilities, and consequently the incentive or compelling power to improve was absent or, at least, was not pressing.

Where no laws prescribed the method of keeping the accounts, the incitement to better accounting methods has come from the improvement in the standards of general accounting, or from the fact that the increase in the works' business, on account of the urban growth, made it mandatory that the executive become more thoroughly familiar with other phases, especially the financial, than those that applied to the mechanics of supplying water. A further incentive to the municipal works' executive was to be found in the fact that the executive of the privately owned works had command of a vast amount of detailed knowledge which the municipally owned works' executive did not have, but which he badly wanted. To obtain this knowledge, the executive of the municipally owned works found it necessary not only to improve his office pro-



ADDRESS 15614 Wabash — LEDGER 21-25

CONSUMPTION	AMOUNT DUE	SUNDRY CHARGES AND CREDITS ON REDJ	METER READINGS .60
28	2.42	DEC 2046 2.42	DEC 14 198
15	1.58	MAR 2847 .08 1.66	MAR 13 213
32	2.88		JUN 16 245

DATE	SIZE	STYLE OF METER	NUMBER	DATE	SIZE	STYLE OF METER	NUMBER
5-14-27	5/8	neah	1130662				

ADDRESS — LEDGER

CONSUMPTION	AMOUNT DUE	SUNDRY CHARGES AND CREDITS ON REDJ	METER READINGS

DATE	SIZE	STYLE OF METER	NUMBER	DATE	SIZE	STYLE OF METER	NUMBER

FRONT AND REVERSE OF PAGES FROM CUSTOMERS' LEDGER, WATER DEPARTMENT, DETROIT

ABSTRACT SHEET

PRESENT READING		PREVIOUS READING		SIZE	CONSUMPTION		AMOUNT DUE
							.00 ✓
JUN 10	245	MAR 11	213	⅝	32		2.68
JUN 10	377	MAR 24	360	⅝	17		1.71
						AR	1.25
						%	.06
							3.02 TOT
					49		5.70 ✓

RATES				SERVICE CHARGE				LEDGER CONTROL		
CONSUMPTION IN THOUSAND CUBIC FT.			AMOUNT	2	⅝"		120	RATES	4	39
49		@ 65¢	3 19		¾"			SERVICE CH'GE		
		@ 50¢						REPAIRS		
		@ 40¢						BUILDING TAX		
									70	06
		MIN.						ARREARS	1	25
								CREDITS		
		TOTAL	3 19		TOTAL		120	TOTAL	5	70

ABSTRACT SHEET OF TYPE USED BY DETROIT BOARD OF WATER COMMISSIONERS

cedure but also to make changes in his accounting methods.

While the engineer, the supervisor, or the mechanic supplies the data on the physical equipment to the executive, the accountant must perform a like service on the financial conditions and operations, nor must he be one whit less accurate in his work and statements than the man in charge of the planning, designing or operating of the physical elements of the works. The accountant's work touches all the phases of the works—investments, cost of operation and production, state or municipal regulations and, above all, the accounting relations between the consumer and the works—and certainly, nothing affects the good-will of the consumer towards the works as much as accurate methods in keeping these accounts.

The refining of the accounting information needed in the administration of public utilities has been one of constant progress and has made an ever-increasing demand for account-

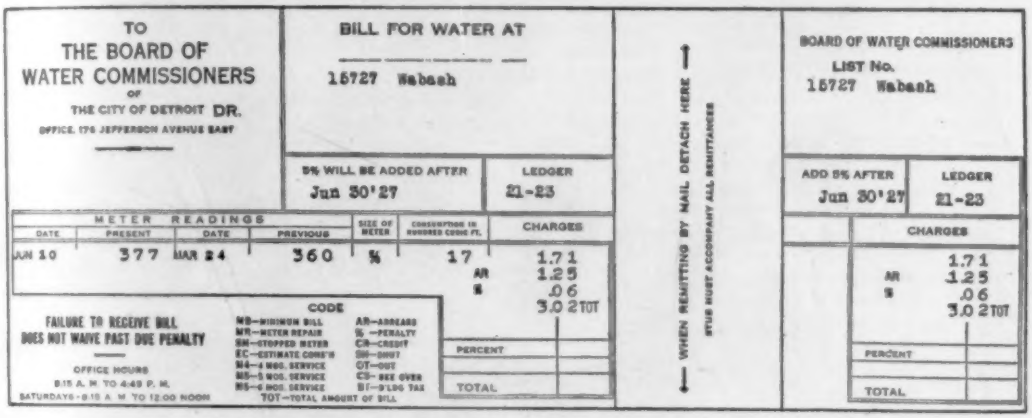
ing labor. To employ the former type of experienced and reliable accountants at the price such labor commands, would manifestly, on account of its cost, be prohibitive—even if it could be obtained. Information that is desirable or needful has to be obtained, and this is impossible with unskilled and cheap labor, unless this labor is given a large amount of assistance in performing certain operations with the least mental effort. This kind of assistance has been found in mechanical equipment.

Having once found that mechanical devices could be used in accounting, the inventive geniuses in the employ of the various office equipment manufacturers began bending their efforts to make these mechanical aids better, more efficient and, to a greater extent, automatic. For a long time the manufacturers were content to fabricate their machines for general bookkeeping, and to supply the demands of the merchant or manufacturer. Privately owned public utilities, to which the refinement in accounting information was most needful, sought to make use of these inventions and, through their insistent demands, a whole line of equipment adapted to their uses has been developed, especially for use in customer accounting.

The general accounts—balance sheets and other standard financial statements—were similar in their nature to those of other businesses, but some of the subsidiary accounting was vastly different, especially the accounting between the utility, such as water, and the multitude of consumers. It is necessary that these accounts be absolutely accurate; that the statements be gotten out promptly, and delivered on a scheduled date; that these statements be understandable, legible and, above all, neat. Privately owned electric, gas and water plants were the first to make use of such consumer accounting methods. Municipal plants are still backward in the use of this equipment.

Mechanical Equipment in Use

It is not the province of this paper to delve into the underlying causes of this condition, but rather to discuss the use of machines in a water-works office in connection with consumers' accounting. Detroit was the first of the larger cities that adopted machines for accounting purposes, and may now be said to be fully equipped to take care of its accounting, mechanically, in all of its branches, excepting the general books. Billing machines are used for consumers' accounting; machines are used for cash postings; abstracting, or checking, is done with machines, addresses are printed on the bills by means of an addressograph, likewise the ledger and route number. By an ingenious device there is also incorporated in the Addressograph an auxiliary printer by which, from time to time, messages from the Department are printed on the bills.



TYPE OF BILL USED BY BOARD OF WATER COMMISSIONERS, DETROIT

The principal equipment in connection with the keeping of the consumer accounts is the billing machine. Here it may be noted that a ready-made machine does not at all times fit all local conditions, no more than the same type of pump is suitable for all communities. However, this need not worry the executive who contemplates the installation of such equipment. All manufacturers of this type of office equipment have experts who are conversant with the needs of water-works records in general, and who, on request, will make a study of the local needs and will plan a machine or system for any particular works. Naturally, these manufacturers expect to sell their equipment. At the same time the manufacturer does not wish to sell at the expense of having his system and equipment fail to function properly.

Detroit has been doing real machine billing

IMPORTANT NOTICE
C. S.

Construction Service—A flat rate charge to cover that period from date service line is installed to the date of meter installation.

¾" Service $ .75 per month
1" Service $1.50 per month

Meters will be installed promptly upon request providing proper preparation has been made.

This bill is for water used at premises designated on face of bill and these premises are responsible for payment of the charges.

RATES

Information regarding this bill and the rates for water may be obtained by calling at the Main Office of the Board of Water Commissioners, 176 Jefferson Avenue, East. Telephone, Randolph 5550.

METER TROUBLE

If your meter leaks, or if there is any interruption in your water service, call Melrose 5430.

Water bills are payable at the Office of the Board of Water Commissioners, 176 Jefferson Avenue, East, but may also be paid WITHOUT CHARGE at the following Banks and THEIR BRANCHES:

BANK OF DETROIT
241 Fort Street, West

THE DIME SAVINGS BANK
Griswold and Fort Streets

THE PEOPLES STATE BANK
Fort and Shelby Streets

MICHIGAN STATE BANK OF DETROIT
4701 Chene Street

NORTHWESTERN STATE BANK
9479 Grand River Avenue

REDFORD STATE SAVINGS BANK
Redford District

PEOPLES STATE BANK OF REDFORD
Redford District

UNION SAVINGS BANK
Brightmoor District

UNION STATE BANK
Springwells District

THE JEFFERSON SAVINGS BANK
Grosse Pointe Park, Michigan

THE HIGHLAND PARK STATE BANK
Highland Park, Michigan

AMERICAN STATE BANK
1145 Griswold Street

REVERSE OF BILL USED BY BOARD OF WATER COMMISSIONERS, DETROIT

for the past ten years, and the installation of the equipment was the result of inability to secure competent clerical help at a fair price during the World War. Nor would the Department return to the pre-war status, even should an abundance of cheap labor be procurable, if for no other reason than that the accounts are kept more accurately and the bills are rendered to the consumer in better style, on time, thus making a most favorable impression, and, above all, doing away with numberless complaints on account of inaccuracy and uncertain delivery of bills.

Detroit has today approximately 233,000 active meter accounts, with 1,500 flat- or assessed-rate accounts. The so-called cycle reading of meters is practiced—the readers doing nothing but reading meters—and there is a constant flow of work ready for the billing machines, eight in number. It is expected that, shortly, even part of the meter-reading work, namely, that of computing the individual consumption, will be done by machine, using some subtracting machines for the purpose of obtaining a total consumption by routes, districts, and areas, to complete the final tie-in with the total consumption, as shown on the billing machines for the same areas.

Work of the Billing Machines

The billing machines print date of present reading, the reading, date of previous reading and the previous reading, and the consumption. On the type of machine used, should there be an error in the subtraction, the billing machine automatically locks, preventing a mistake in the billing. Because of the type of rates in force in Detroit, namely, a service charge based on the size of the meter, and a consumption charge, the machine prints the size of the meter and the total amount of the bill. This latter amount is automatically printed on the stub. Provisions are also made to include, in the totals, the arrears or miscellaneous charges.

Besides the bill proper, the same operation that prints the bill prints like information on the abstract sheet, which is used for the purpose of checking and segregating the various kinds of information needed for statistical and control purposes; the machine likewise prints the necessary ledger entries on a card. Here it may be noted that when the machines were ordered considerable thought was given to the so-called stub accounting system, as opposed to the ledger card system, which latter system would give a chronological history of the account. The card system was adopted as being more suitable to conditions existing in Detroit, where the works has a tax lien on the real estate for unpaid water bills.

With the making of the bills, the billing machine carries along both the total of the meter consumption and the amount of money. By breaking down with calculating machines the various consumptions, service charges, arrears, credits, and penalties, the correctness of the billing is established. The totals are entered by machine on the control cards. Posting is

likewise done by cash posting machines, and various segregated totals are received to be posted against the control.

Consumers' accounting by machine may at first glance appear as something cumbersome to operate and difficult to maintain. However, a short study at close range will soon convince one that every move made is made directly and without any false motions, and the information obtained through these movements is the exact information desired—the machines are constructed for that purpose only. Nor is the matter of operating such a machine difficult; in fact, no more difficult than operating a typewriter or an adding machine, thus allowing the use of boys or girls for this important work.

As stated before, there are a number of types of machines that can be used for customer accounting, some one being suitable for the particular local conditions. Some of the machines are equipped with a regular alphabet, others, again, use only numbers and the symbols or letters necessary to fit the particular system. No office is too large for the use of these machines, nor are there any water-works offices so small that a machine, useful for customer billing and other work, cannot be designed.

In conclusion, one water-works office, namely, Detroit, is thoroughly "sold" on machine consumers' accounts billing, if for no other reason than that during the last year of the manual billing each employee in the consumers' accounting bureau handled 2,060 accounts, and now each one handles 3,650, an increase, per person, of over 77 per cent. The bills are accurate and neat and the information needed for the general books is readily obtainable, and, moreover, absolutely accurate.

ACKNOWLEDGMENT.—From a paper read before the American Water Works Association in Chicago.

Building Codes for Safety and Prosperity

"INTELLIGENT attention to sound building requirements may be as useful as ballyhooing to attract new industries and residents. It is obvious that the comfort, health and safety of each individual also hinges upon the building code. . . .

"The effect of environment as reflected in flimsy, unhealthful homes is as insidious as the occasional collapse of the business building is appalling. Both conditions sap public confidence in the ability of the city to protect its citizens adequately."

Giving these and other excellent reasons for the adoption and enforcement of carefully drafted building codes, George N. Thompson, Secretary, Building Code Committee of the Department of Commerce, has written for the Municipal Administration Service an exceedingly valuable monograph on "The Preparation and Revision of Local Building Codes."*

About 600 cities are known to have building codes, but for many of them, as Mr. Thompson points out, inertia is keeping out requirements of a more economical sort and more in line with modern engineering thought.

The monograph outlines several ways in which the soundness of a code may be tested and gives sources from which a local committee can obtain up-to-date information which will enable it to reach intelligent decisions on its own account or check requirements prepared for it.

These sources of information cover such technical questions as Design of Concrete Structures, Erection of Steel, Lumber Grades and Stresses, Fire Protection, Plumbing, Exits, Electrical Requirements, Boilers, Elevators, Heating and Ventilating, and Safety During Construction.

The pamphlet also devotes several pages to a "Recommended Outline for a Building Code." This arrangement has been prepared by the Building Code Committee of the Department of Commerce, after critical study of a great many existing codes. It was submitted for discussion to hundreds of men in all branches of the building industry and probably represents the nearest possible approach to complete agreement.

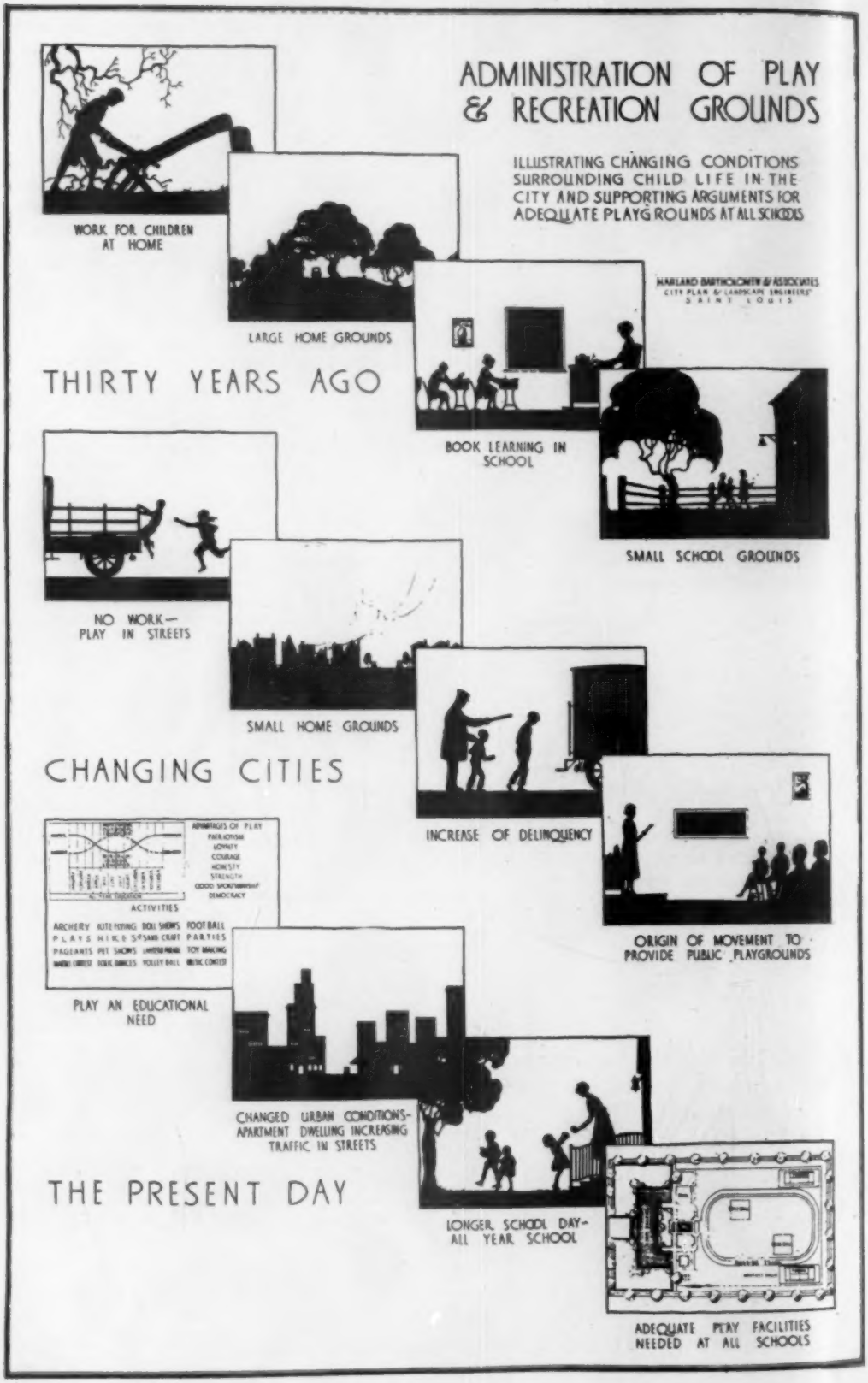
The employment of a consultant by the committee is strongly recommended. On this phase of the subject Mr. Thompson says in part: "There is a growing number of men who because of technical training and administrative experience are recognized as expert consultants. They maintain contact with research laboratories and technical organizations; keep abreast of the growing mass of test information and are well prepared to judge how much of code regulation a given community needs. The services of such an expert generally result in the saving of much time and prevention of common errors, relieving the committee of much detail and leaving it free for more attention to matters of general policy."

* See page 863 of THE AMERICAN CITY for June, 1927.

Texas Experiments with Tinted Concrete Roads

GREEN concrete highways will meet the eyes of automobile travelers over the new and extensive system of roads that is to be constructed in Cameron County, in the extreme southern part of Texas, according to *Russell News*.

An issue of six million dollars of bonds was voted recently for the purpose of building permanent concrete roads. In order to obviate glare from concrete pavements, it is proposed to mix a green coloring fluid with the paving material. Experiments are now being made with a view to ascertaining the quantity of coloring matter to be used and the additional cost it will entail. From an artistic standpoint, green colored highways also will have an appeal that is not found in white or drab colored pavement.


ADMINISTRATION OF PLAY & RECREATION GROUNDS
ILLUSTRATING CHANGING CONDITIONS SURROUNDING CHILD LIFE IN THE CITY AND SUPPORTING ARGUMENTS FOR ADEQUATE PLAYGROUNDS AT ALL SCHOOLS
HARLAND BARTHOLOMEW & ASSOCIATES
CITY PLAN & LANDSCAPE ENGINEERS
SAINT LOUIS
WORK FOR CHILDREN AT HOME
LARGE HOME GROUNDS
BOOK LEARNING IN SCHOOL
SMALL SCHOOL GROUNDS
THIRTY YEARS AGO
NO WORK— PLAY IN STREETS
SMALL HOME GROUNDS
INCREASE OF DELINQUENCY
ORIGIN OF MOVEMENT TO PROVIDE PUBLIC PLAYGROUNDS
CHANGING CITIES
ADVANTAGES OF PLAY
PARTICIPATION
LOYALTY
COURAGE
HONESTY
STRENGTH
GOOD SPORTSMANSHIP
DEMOCRACY
ACTIVITIES
ARCHERY
PLAYS
PAGEANTS
PET SHOWS
FOLK DANCES
KITE FLYING
HIKES
VOLLEY BALL
BOIL SHOWS
SQUARE CRUDE
FOOTBALL
PARTIES
TOY BOWLING
MUSIC CONTEST
PLAY AN EDUCATIONAL NEED
CHANGED URBAN CONDITIONS- APARTMENT DWELLING INCREASING TRAFFIC IN STREETS
LONGER SCHOOL DAY- ALL YEAR SCHOOL
ADEQUATE PLAY FACILITIES NEEDED AT ALL SCHOOLS
THE PRESENT DAY

Planning and Administration of a Modern City's Recreation

THE effective statement of recreation needs quoted in the accompanying "box" is from a preliminary report on a system of public recreation facilities for the city of Orlando, Fla., based upon studies extending over a period of more than a year, by L. Deming Tilton and Harry D. Freeman, landscape architects, of Harland Bartholomew and Associates, of St. Louis.

Because of the practical value to other cities of much of the material in this unpublished report, THE AMERICAN CITY has secured permission to reproduce the three full-page charts here shown, and to quote certain paragraphs of general application to municipalities where a more adequate system of recreation is needed.

The report is presented in three divisions: (1) Present Recreational Equipment; (2) Recreational Needs of the City, Present and Future; and (3) Proposed Plan for a Complete Recreation System. It sets up as an ideal allotment of space for recreation purposes, ten per cent of the city's gross acreage, and, elsewhere, recommends the reservation of playing areas equal to one acre for each one hundred citizens. A chart prepared for the Orlando City Planning and Zoning Commission is inserted in the report to show present developed and undeveloped areas. This tells more eloquently than words could a story which might be paralleled in almost any American city of an equal age, or older. It is the story of an intensity of development through the central and longest-established sections which leaves few vacant spaces of any considerable size available for any purposes whatsoever. This chart demonstrates a present plight while offering a lesson for the future. To quote from the report:

"Beyond these limits development is more scattered, with suitable property here and there for playgrounds, playfields, and neighborhood parks. It will be comparatively easy to secure suitable park spaces in the now vacant lands outside the older section.

"There was a time not long ago when vacant lots could be found in nearly every neighborhood. These pieces of property were valuable in those days for boys and girls for play. These vacant lots and other open spaces disappeared one after another, and a serious handicap is placed upon the play impulses of children. If the city itself, at schools, in parks, and elsewhere, does not supply open spaces which the younger generation need, they are driven into streets and to other undesirable places. . . . The city should be farsighted in its policy of acquiring lands and areas for play."

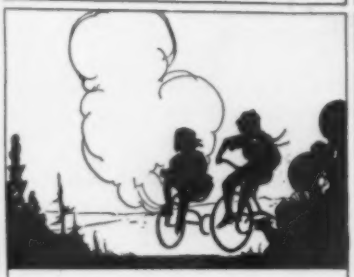
Recreation Areas for All Ages and Classes of People

"It is a dangerous thing for a city to allow the normal play desires of children and young people to be suppressed because of the unfavorable physical structure of the city. A tendency of the present day is to overload the city with population and to 'sweat the land.' Economic necessity concentrates population and limits social and domestic activities. These conditions create an obligation on the part of the city to secure public recreation areas for all ages and classes of people."

Prefatory to outlining the specific recommendations for a complete present and and future recreational system for Orlando, Mr. Tilton in this report sets forth a philosophy of recreation administration, indicating the point at which the provision of playing facilities ceases to be a city planning function and must be taken up and carried forward by certain other agencies:

"It is of the utmost importance in developing a fully serviceable system that decision be made at the outset as to what municipal agency shall be responsible for provision of the necessary land. The city plan is concerned solely with land spaces, the reservation of usable areas before city growth takes place. The aim is to see that play areas are provided as frequently as possible for small children . . .; to locate playgrounds and playing fields of adequate size where the largest number of boys and girls can reach them; to reserve suitable areas for parks of various types before favorable opportunities to acquire them are lost. Experience elsewhere has shown, and Orlando conditions somewhat tend to confirm the belief, that most satisfactory progress will be made in carrying out a definite and well-considered recreation plan if the following primary responsibilities are understood and accepted:

"1. The city of Orlando, through the Council or Park Commission, to purchase or direct the purchase of land for (a) *play areas* which do not require supervision, (b) *athletic or play fields* that can serve the young men and women no longer in school, (c) *small parks* wherever these may be secured at little or no cost, (d) *neighborhood parks*, (e) *large parks and reservations*, (f) *pleasure drives.*

CLASSIFICATION of POPULATION	FACILITIES WHICH SHOULD BE AVAILABLE
 SMALL CHILDREN	HOME GROUNDS INTERIOR BLOCK PLAYGROUNDS NEARBY CHILDREN'S PLAYGROUNDS & KINDERGARTENS DRIVES, PROMENADES } IN PARKS
SCHOOL CHILDREN	HOME GROUNDS INTERIOR BLOCK PLAYGROUNDS PLAY AREAS IN PARKS SWIMMING POOLS HORSE SHOE COURTS LAWN BOWLING BOY & GIRL SCOUT CAMPS SCHOOL PLAYGROUNDS PLAYFIELDS FOR ATHLETICS COMMUNITY CENTERS OUTLYING NATURALISTIC PARKS
YOUTH	
ADULTS	PLAYFIELDS SWIMMING POOLS HORSE SHOE COURTS LAWN BOWLING NEIGHBORHOOD PARKS LARGE PARKS COMMUNITY CENTERS PLEASURE DRIVES
HARLAND BARTHOLOMEW & ASSOCIATES CITY PLAN & LANDSCAPE ENGINEERS SAINT LOUIS	CHART SHOWING A CLASSIFICATION of POPULATION & RECREATION FACILITIES

INTERIOR BLOCK PLAY AREAS OFFER PROTECTION TO CHILDREN WHO WOULD OTHERWISE BE UPON THE STREETS
BLOCKS WITH EXCESSIVE LOT DEPTHS SHOULD PROVIDE INTERIOR BLOCK PLAYGROUNDS
PROTECTED PLAY AREAS ARE POSSIBLE IN BLOCKS WITH LOT DEPTHS OF 130FT
PROTECTED PLAY AREAS
COMMUNITY CENTERS ARE NEIGHBORHOOD MEETING PLACES—SCHOOLS—SHELTER HOUSES IN PARKS &—OTHER BUILDINGS WHICH MAY BE USED FOR INDOOR RECREATION MAY SERVE
DISTRICTS OF 1-4TH MILE RADIUS MAY BE SERVED
COMMUNITY CENTERS
PLAYGROUNDS FOR SCHOOL CHILDREN WITH SUPERVISION SHOULD CONSTITUTE THE PLAYGROUND SYSTEM
SCHOOL PLAYGROUNDS SHOULD CONTAIN AT LEAST 5 ACRES PLAYGROUNDS SHOULD SHOW 100 SQ FT PER CHILD ENROLLED
PLAYGROUNDS WITH SUPERVISION HAVE AN EDUCATIONAL AS WELL AS RECREATIONAL SIGNIFICANCE. DISTRICTS OF ¼ MILE RADIUS SHOULD BE SERVED
SUPERVISED SCHOOL PLAYGROUNDS
CERTAIN SECTORS OF THE PLEASURE DRIVE SYSTEM SHOULD BE OF THE FORMAL BOULEVARD TYPE
THE PLEASURE DRIVE-SYSTEM SHOULD HAVE ITS ORIGIN IN THE—HEART OF THE CITY
OTHER SECTORS OF THE PLEASURE DRIVE SYSTEM SHOULD BE OF THE—INFORMAL NATURALISTIC TYPE—
PLEASURE DRIVES
PLAYFIELDS GENERALLY SHOULD SERVE DISTRICTS OF FROM ¼-½ MILE RADIUS & SHOULD BE FROM 10-50 ACRES IN AREA
SWIMMING POOLS TENNIS COURTS—FOOTBALL & BASEBALL FIELDS ARE TO BE DEVELOPED IN CONNECTION WITH PLAYFIELDS
ONE SET OF PLAYFIELDS SHOULD BE LOCATED AT ALL JUNIOR & SENIOR HIGH SCHOOLS ANOTHER SET SHOULD BE IN PARKS OR SPECIAL SITES
PLAYFIELDS
ONE LARGE PARK SHOULD BE A RECREATION PARK, HAVING AS ITS DOMINANT FEATURES TENNIS COURTS GOLF COURSES—BASEBALL FIELDS & POLO GROUNDS
THERE SHOULD BE A PARK FEATURING WATER DISPLAY & WATER SPORTS
OTHER TYPES OF PARKS IN THE LARGE PARK SYSTEM SHOULD INCLUDE AMUSEMENT TYPES—WHOLLY NATURALISTIC TYPES—BOTANIC GARDEN TYPES
GOLF COURSE
LARGE PARKS
A NEIGHBORHOOD PARK TO BE ABLE TO RENDER FIRST CLASS SERVICE SHOULD HAVE ATLEAST 20 ACRES—PREFERABLY 50-75 ACRES
EVERY SQUARE MILE OF RESIDENTIAL AREA SHOULD HAVE ITS NEIGHBORHOOD PARK
A PARK OF THIS TYPE SHOULD HAVE A PORTION OF ITS AREA USED AS A P L A Y FIELD
NEIGHBORHOOD PARKS
SWIMMING POOLS
HORSE SHOE COURTS
OUTDOOR THEATRES
TENNIS COURTS
ARCHERY RANGES
SPECIAL FACILITIES
HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLAN & LANDSCAPE ENGINEERS
SAINT LOUIS MISSOURI
TYPES OF
RECREATION FACILITIES
ORLANDO
FLORIDA
CITY PLANNING AND ZONING COMMISSION

"2. The Board of Education to purchase and develop (a) *playgrounds* at elementary schools for supervised play, (b) *play fields* for use of high school boys and girls, and (c) to make school buildings available for *community center* activities pending development of a system of municipally owned and operated recreation centers.

"The problem of the management of recreation activities is not within the province of the city plan, but a few general observations need to be made before a systematic recreation system is discussed in detail. The school grounds should be the backbone of the playground system. If school grounds are made into playgrounds, and are used in the educational process, as they should be, it is entirely reasonable that the management of recreational activities be adjusted in such a way as to recognize the right of the school board to participate more directly in the management of its own property. Some cities are finding it better to place the recreation department of the city in the office of the Board of Education rather than in the city hall, since such a large share of the effort of the recreation staff is directed toward school children and involves activities of a pronounced educational character. If the recreational development of the city is centered in the school system and receives the major portion of its funds from the Board of Education, as is the case in many cities, the activities of the department can be extended without great difficulty to cover the entire city.* There would be no need of a separate playground or recreation commission merely to handle the recreation equipment and activities in parks. . . . This is a response to the belief that it is socially and economically unwise to keep up a dual system of those two centers of child activity, a system of city playgrounds and school playgrounds.

"There was a time when the play of children was considered a waste of time. There was work to be done. There were no playgrounds. The school was a dreary, box-like building, a stuffing works into which the children were marched under strict discipline in the morning and from which they emerged as from a prison in the evening. Education was all indoors. There was no need for a school site much larger than the building itself. . . . The last thirty years have been years of remarkable change in city conditions. Dwellings and their yards have been shrinking in size. Chores have disappeared. Streets have become hazardous. Apartment dwelling has increased, home ownership decreased. But the play of children has not changed and the desire has not abated. . . . The child's desire to play has been recognized as a natural instinct, not to be suppressed or eradicated, but to be put to use. Play has come into the schools. The playground is an essential part of the school plant. . . . The playground, moreover, is going to be used with greater intensiveness in the future. Regardless of other playing areas, regardless of their size, location, and attractiveness, there must be generous, well-equipped, all-year, supervised playgrounds at each elementary school. There is no escaping this obligation. The recommendations of this report as regards the basic playground system for Orlando, are based upon these premises."

*EDITORIAL NOTE.—There is considerable diversity of opinion throughout the country as to where responsibility for recreational administration should rest. Jay B. Nash, Associate Professor of Physical Education, New York University, described in THE AMERICAN CITY, issue of May, 1926, page 475, in an article entitled "Organizing a City's Play and Recreational Assets," the plan of cooperative administration which he, as Superintendent of Recreation for the city of Oakland, Calif., and Director of Physical Education in the Oakland Public Schools, put into effect. According to statistics from 758 cities published in the 1927 Year Book of the Playground and Recreation Association of America, three cities now have such joint administration programs, while a total of seventeen cities share responsibilities for public recreation between some two municipal departments. One hundred and ninety-seven cities have independent playground and recreation commissions, departments, divisions, boards, or bureaus, while 124 place recreational administration in the hands of the Board of Education. In 479 cities, it is in the hands of some one other municipal department. In remaining cities included in the statistics, private organizations operate playgrounds, recreation centers, or community recreation.

More Public Recreation Places for Negroes

IN a recent issue of THE AMERICAN CITY there was an item entitled "City Dump Transformed Into Playground for Colored Children."

On July 15, 1927, the city of Orlando, Fla., through the Commissioners, Mayor and Superintendent of Public Recreation, gave its negro citizenry a large tract of land on Carter and West Moreland Streets, to have and to hold for a municipal recreation ground. A modern community center house will be erected here, with ample provision for the fast-growing population in this section of the city.

The negro population of Orlando challenges any city claiming the honor of doing most for its negro population. Orlando leads other cities of less than 100,000 population in its recreation program for the colored citizens, for it is a rule of the Superintendent of Public Recreation to maintain the same high standard for negro workers as for white and to provide recreational facilities for negroes as well as for whites. A few weeks ago a public bathing beach was opened up for white citizens on one of the thirty-one beautiful lakes of the city. Just a week later city engineers and surveyors began work on a public bathing beach for negroes on one of the most beautiful of the lakes. The plans are for an absolutely up-to-date, sanitary bathing beach. Negro organizations have heartily endorsed this progressive move and volunteered to do whatever is needed for the promotion of the work.

There is splendid interracial understanding in Orlando, which has been very much strengthened by an organization of seven negroes, appointed by the Orlando Negro Business League, and five white people appointed by the Chamber of Commerce. This organization is the Interracial Committee. In the meetings of this committee, all problems and misunderstandings are threshed out and racial relations are growing better and better.*

J. C. HIGH,
Director of Negro Activities, Department of Public Recreation, Orlando, Fla.

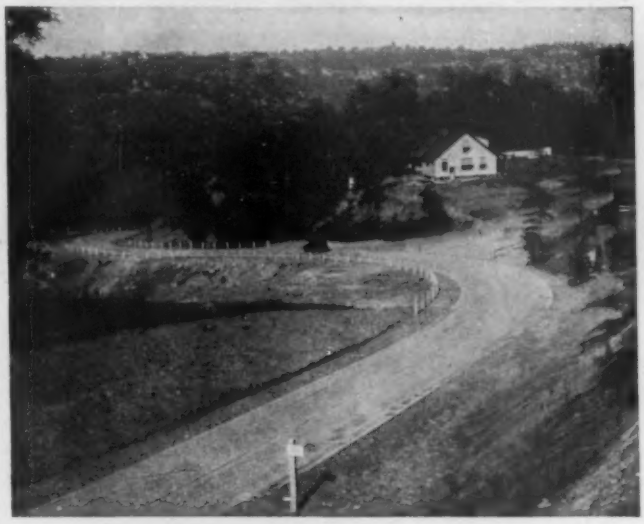
* See "An Idea Whose Time Has Come," in THE AMERICAN CITY, March, 1927, page 373.

The Highway System of Allegheny County, Pennsylvania

By Norman F. Brown

Director, Department of Public Works, Allegheny County, Pa.

IN a comparatively short period of time there has been introduced in this country a new system of transportation, the magnitude of which already has revolutionized the daily lives and habits of the American people, and the future development possibilities of which seem unlimited. Taken as a whole, automobiles, trucks and motor-busses traversed the highways long before the various government agencies realized the necessity for providing adequate roads for them to travel over. Allegheny County, Pa., however, was among the first to recognize the necessity for adequate paved roads and for several years past it has been engaged in a systematic program of road building with a preconceived plan for an ultimate system designed to meet the requirements of any future traffic.



BALDWIN ROAD—TYPICAL OF THE HILLY TERRAIN FOLLOWED BY ALLEGHENY COUNTY ROADS

Allegheny County is densely populated, with the city of Pittsburgh centrally located in the county and practically surrounded by rivers on three sides and by hills on the fourth side. Beyond the rivers and hills there are many urban communities and manufacturing districts which form the metropolitan area about the city proper. The rugged topography of the county in general provides innumerable obstacles in the path of modern highway construction. Roads usually follow the course of the various streams or wind along hillsides ever changing in direction.

MAP OF THE ULTIMATE HIGHWAY SYSTEM OF ALLEGHENY COUNTY, SHOWING RADIAL, RIVER, AND BELT ROADS

During the past six years the number of vehicles in Pennsylvania has increased from approximately 522,000 to more than 1,275,000. The rate of increase has been fairly uniform during this time, averaging about 16 per cent per year. Assuming that the future rate of increase will be only 9 per cent per year, more than 1,800,000 passenger cars will be registered in Pennsylvania in 1930. Commercial vehicles have gained steadily in numbers at the rate of approximately 8 per cent

ELKHORN ROAD FOLLOWS THE MONONGAHELA RIVER THROUGH THE COUNTY

per year. Under the new classification, which took effect in 1924, there were over 178,000 commercial vehicles in the state. Statistics for 1926 indicate that this figure has been increased to more than 206,000. At the same rate of increase during the next three years, more than 280,000 commercial vehicles will be registered in the state in 1930. This does not include the 8,000 motor-busses which were registered in 1926.

Allegheny County has the second largest motor-vehicle registration in the state. Since 1924 the county has gained at an average rate of about 24,000 motor vehicles per year. Over 194,000 automobiles and commercial trucks were registered in 1926. Assuming the same annual increase during the next three years, Allegheny County must be prepared to afford adequate transportation facilities for more than 265,000 automobiles and trucks. When that time comes, Allegheny County will be prepared. An ultimate system of county highways is now in the process of construction.

The roads which constitute the ultimate highway system of Allegheny are divided into three classes. They are (1) riverside highways, (2) radial highways, and (3) circuit highways. The riverside highways will be continuous trunkline boulevards which will be constructed on both banks of the several streams flowing through the county. They will begin at the county lines and will continue through the city of Pittsburgh, following the course of the streams to the opposite borders of the county. The highways will be connected by adequate bridges built at suitable locations so that traffic can easily interchange from one trunk boulevard to another. The radial highways extend out in all directions from Pittsburgh to the outermost boundaries of the county. The circuit highways completely encircle the interior of the county, making convenient intersections with the radial and riverside roads. Radial highways already are well developed in the county. From time to time, however, they must be widened, straightened or otherwise improved. A skeleton of the riverside highway system already exists in the county, but needs modernization. One of the weak points in the county highways system has been the absence of circuit highways or belt routes. The ultimate system provides an inner and an outer belt route, both of which are of great importance. They provide direct intertravel between outlying communities and will relieve the congestion in Pittsburgh, by permitting travel not destined for Pittsburgh to pass around the city. During the past three years the inner belt route has been made continuous and numerous miles of the outer belt

ANOTHER VIEW OF BALDWIN ROAD, SHOWING THE EXCELLENT CURVES, FILLS AND GUARD-RAILS OF THIS COUNTY HIGHWAY SYSTEM

line have been completed.

An ultimate system of highways cannot be completed in one year—in fact, the road system of a growing community is never totally completed—it is always subject to additions or alterations. The advantages of following a pre-established road plan, however, are many. The Allegheny County plan is flexible enough so that additions and alterations can be provided for in the future. As traffic increases in volume and loads become heavier, the need for higher-type pavements will become greater. Many of the present pavements will be worn and will become dangerous to traffic. Future designs and construction must include maximum safety provisions for the traveler.

The Engineer and Civic Art

WATERWAYS and docks, often the plague-spots of our cities, are among our greatest assets for potential beauty, as was recently pointed out by J. Haslett Bell, landscape architect and city planner, of Denver, in a paper on "The Engineer and Civic Art," delivered before the convention of the American Society of Civil Engineers recently in that city. Naturalistic treatment of the land lying along small streams makes it an admirable contribution to the park system, while the addition of parks and promenades along the waterfronts of many busy ports of our country would render them focal points of interest to the entire population of the section as similar treatment has given interest to the waterfront activities of such European cities as Paris, London, Liverpool, Antwerp, and Hamburg.

Bridges, large and small, Mr. Bell also includes in his enumeration of objects infinitely suggestive in their potentialities of beauty, both in design and in embellishment—an enumeration which is of interest in view of recent notable changes in public sentiment in the matter of municipal esthetics. Only a decade or so ago, when the art and science of city planning were still in their infancy in America, charges were often made that the subject ran to an excess on the side of beautification. The charges led to a change of sentiment in the opposite direction and an over-concentration, perhaps, on the purely utilitarian aspects of the subject: the emphasis changed from the side of art to that of engineering. But now, the pendulum has reached a better-balanced equilibrium. Present-day ideals of city planning have brought a new interpretation of civic beauty which might now be defined by those engaged in its creation as utility plus. A conviction is abroad that for the completest expression of the lives of grouped together human beings there must be an environment harmonious in form and coloring. Appropriately attractive surroundings have become so a matter of course in the more favored sections of our cities that we with difficulty accept Mr. Bell's invitation to "imagine a city designed and constructed for just the practical use for which it is intended . . . with no ornament and nowhere the eye relieved by beauty or softness of decoration." We find ourselves instantly agreeing that "were man required to live in such surroundings, there would undoubtedly be changes in him mentally and physically."

Among the opportunities mentioned by Mr. Bell for esthetic betterment along with utilitarian improvement, are those of streets; street furniture; small street parkways formed by irregular or triangular intersections; curved and dead-end streets with their opportunities for planned vistas of landscape; the design and height of buildings along a street—a matter on which city engineer, architect and city planner might well cooperate; natural beauty within the city, and the whole matter of the treatment of land; and public utilities. Of the last named, Mr. Bell has this to say:

> "Germany at every opportunity has used the structures of her public utilities as a means of architectural expression. Power-houses, water-towers, and even refuse-disposal plants are built to present a pleasing appearance. The elevated transit lines of Chicago would not compare favorably with those of Berlin. However, the subway entrances of our larger cities do compare favorably now with those of foreign cities. The reservoirs of our larger cities may find appropriate locations in large city parks, or in outlying park reserves. They are often better located here because of the control of watersheds."

Of the design of the street system, a matter for the cooperation of the city forester with the engineer, the architect, and the city planner, the writer believes that

> "Thorough study of the principal thoroughfares always leads to many opportunities for improvement of the city's appearance while making for smoother traffic flow . . . while in the outlying districts . . . tree-lined avenues may offer a pleasant approach to the congested districts. The engineer and the city forester can cooperate to locate street trees so that for a long time they will not be affected by street widening."

Health Publicity a la Carte

THE Syndicated Bulletin Service of the American Public Health Association has been extended recently to industrial publications. Heretofore this service has been offered only to Health Departments, Tuberculosis Associations, and other organizations specializing in health, but there is also a great demand for it from employee magazines of the "House Organ" type.

As explained in THE AMERICAN CITY last November, the Association is doing a valuable work in preparing popular, well-illustrated reading-matter which is put in the form of stereotype plates ready for use. A scale of exceptionally low prices now makes it possible for the editor of a popular bulletin to secure any part of this service from a single page or cartoon up to the full issue of 8 pages per month. The right to copy the short, well-written articles or to reproduce the illustrations is also provided for.

It is a part of the policy of the Association to broadcast in every possible way information on public and personal health, and this syndicated service is proving to be of great value to the cause. Special care is taken to have the material not only interesting but accurate. This is made possible by the many sources of information available and by the personnel of the organization, which includes experts in every line of health. Since it is not a money-making scheme, and since the number of subscribers is constantly growing, the low cost of the service is an attraction. Full information can be secured by addressing the Health Bulletin Service, American Public Health Association, 370 Seventh Avenue, New York City.

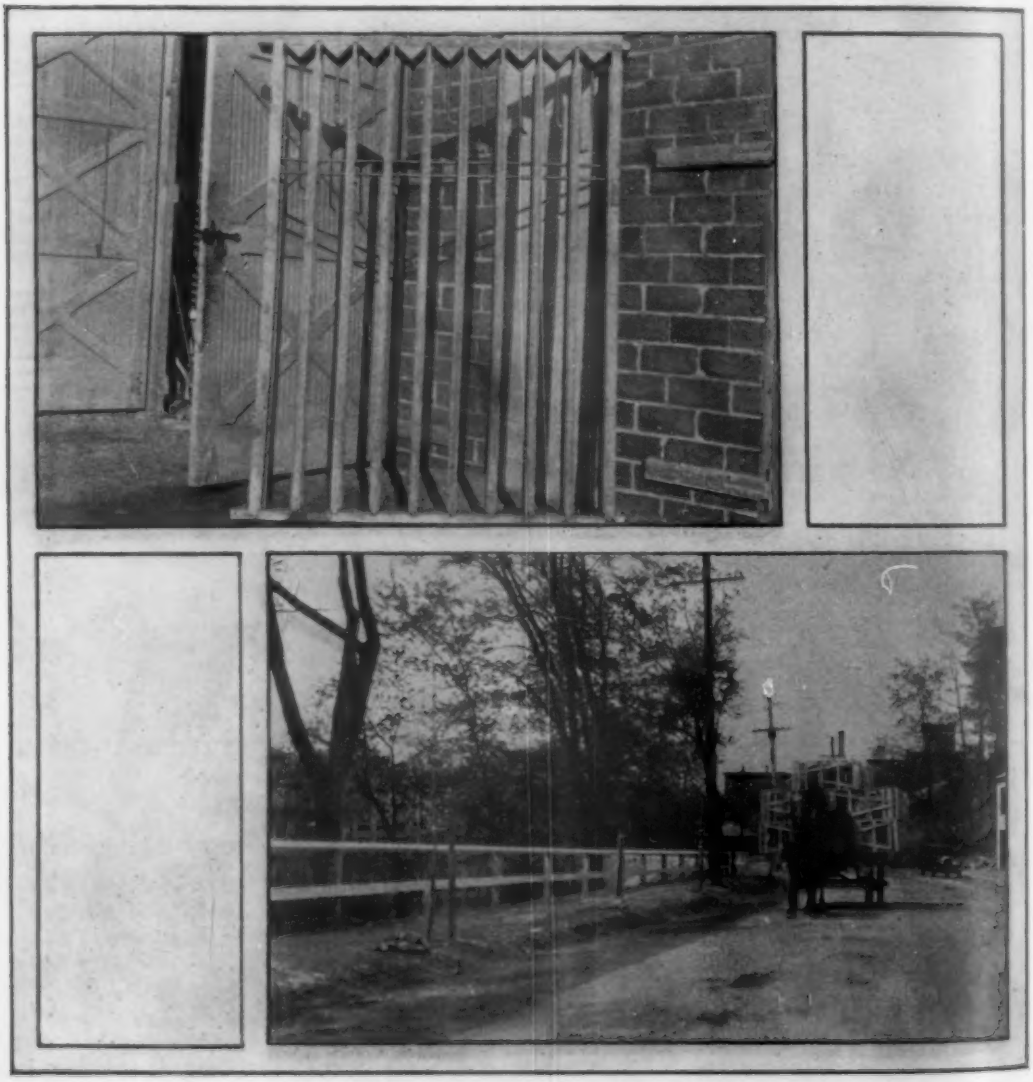
City-built Concrete Fence-Posts

By A. T. Rhodes

Superintendent of Streets and Sewers, Leominster, Mass.

CONCRETE fence-posts for guard-rails have been in use for some time now in Leominster and have brought much favorable commendation from taxpayers and other interested observers. Last winter we built up a gang mold which will make nine posts in a group. The posts are 7 feet long and 6 inches square, reinforced the entire length with a ⅜-inch twisted bar in each corner.

The style of fence we are erecting calls for a 4 x 4-inch top rail and a 2 x 6-inch bottom rail. The post is notched at the upper end to accommodate the 4 x 4-inch top rail and a ⅝-inch anchor bolt is built into the top of the post to hold the 4 x 4-inch top rail in place. Two pieces of 3.8-inch gas pipe are built into the post to take the bottom rail of the fence. Both the top and bottom rails are halved together at every other post, staggered, painted and coated with white lead between the halving. The ⅝-inch bolt holding the top rail is countersunk into the rail. The posts are rubbed above the grade with a carborundum rubbing stone to give a good finish.



FORM FOR CONCRETE GUARD-RAIL POSTS AND COMPLETED INSTALLATION IN LEOMINSTER, MASS.

The gang mold is hooked together with hook-and-eye bolts, and two through-rods pass through the mold from side to side, holding the ⅜-inch gas pipe in place, thus forming spacers for the post mold and clamping the outsides together to prevent spreading. The mold is made of ⅞-inch boards, except the two outsides, which are made of heavier planks. The ends of each division head are mortised at the top and bottom into the headers. A board platform is leveled up and the gang mold placed upon it before filling. Chamfer strips are used to mitre the outside corners of the posts. A 1:2:3 mix of concrete with a 2 per cent saturated solution of calcium chloride added is used, making it possible to remove the posts from the molds two days after the concrete has been placed. The posts can be lifted by the ⅝-inch bolt in the upper end without loosening the bond.

The calcium chloride accelerates the hardening and setting of the posts. With only one post mold of this kind, the making of the posts has been in the nature of knitting-work, some gang at the municipal yard filling the mold whenever it is stripped and set up again. The filling of the mold takes only a short time, after which it is left for the concrete to harden and the form to be set up again. The costs of the posts have not been determined accurately as yet, but, inasmuch as the forms are used repeatedly and men do not have to be employed outside of our regular gangs to manufacture the posts, the costs are known to be very low.

Campaign Reduces Ground-Water Infiltration in Sewers

By D. C. Newman Collins

Township Engineer, Cranford, N. J.

THE infiltration of ground water into sanitary sewers is manifest to many municipalities, and the remedy is elusive. Our sewers rarely give trouble in dry, warm weather when water consumption is greatest, and yet they overflow during wet periods with no causative increase due to domestic use. Overflowing manholes testify to an overreaching of capacity, but frequently defeat analysis of the definite source of the trouble. To rebuild a sewer system is too great an expense to be considered, and where long trunk lines exist, combination storm and sanitary sewers are very expensive. Cranford, N. J., has about four miles of trunk line to tidewater, and my judgment prompted a persistent campaign against infiltration and obstructions in the sewers.

In 1919, our population of 6,000 suffered most intolerable conditions due to backing-up of house sewers and overflowing manholes for periods of ten to twelve days in average wet periods. Our outfall sewer has a capacity of 3,000,000 gallons per day. This will handle a maximum flow of 500 gallons per capita. Today, after the addition of many miles of new sewer and with a population estimated at 10,000, we have very little complaint. Our manholes overflow only in a few places for a few hours at exceptional periods. Our per capita flow is now about 300 gallons per day.

The practice in Cranford is to exclude roof leaders from discharging into the sewers, but cellar drains are permitted. Just what actual conditions exist we do not know, but we have a suspicion that the flow from many roof leaders and perhaps property drains finds its way into the sewers. Very likely the ends of Y branches contribute a serious leakage in the aggregate, and poorly constructed or loosely bedded house connections contribute materially to the trouble. While we have some leaky manholes, I do not think they alone cause serious trouble.

Cranford lies in the Rahway Valley, with the Rahway River winding through the town in a general north-and-south direction. The tributaries which feed storm water into the river find their way mostly through private properties, which reduces the responsibility of keeping them open, with the result that storm water is retained, saturating the soil and causing general abnormal conditions.

Initial Sewer Cleaning

The first actual work in our campaign against infiltration was in 1921 when we started a gang of men with an improvised outfit of buckets and ropes at the outlet below Rahway. We made successful progress for about a mile, when we found one section completely filled with quicksand deposited from a long private sewer which had been poorly laid and which supplied an apparently unlimited flow of quicksand as fast as we removed it. We took up the matter with the owners of the private land and, as we had spent our allowance,

STONES, WOOD AND MUCK REMOVED FROM MANHOLE IN ROSS AVENUE, CRANFORD, N. J.

we let the owners have our men to reconstruct and clean this lateral.

We then purchased two complete sewer-cleaning outfits consisting of special buckets of different sizes, wire rope and hand winches. On each outfit we put three men, who, working together, could assist each other in emergency. We cleaned our entire four miles of trunk line and each principal lateral in town at a total cost, including equipment, of about $3,500. No flushing was done, because we believe that this simply pushes along obstructions which should be removed. We preserved photographic exhibits of material removed, consisting of piles of cobbles, road stone, roots, sand, ashes and miscellaneous materials, most of the accumulation being just downstream from right-angle bends.

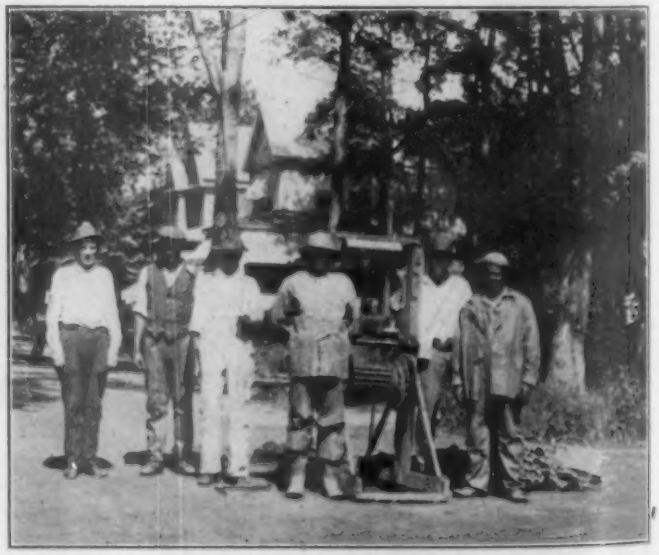
One specimen consisted of a solid mass of roots that weighed 60 pounds and looked like a lump of crude rubber. It measured about 8 inches thick and was in the form of an L about 18 inches on each leg. It was taken from a 20-inch line about 25 feet deep and had probably alone caused a big percentage of our trouble. Many of the piles of material from a single length between manholes would fill a small truck.

This systematic cleaning helped greatly. Each fall we now put our men to work cleaning the sewers after the road work is finished. This work includes all laterals and other troublesome spots. About $2,000 is put into our yearly budget for this work, but rarely more than $800 to $1,200 is spent. The work is all done slowly by hand power, working in the direction of the flow. We find that a slowly moving bucket will increase the pressure of the flow and push ahead into the manhole much more sediment than the bucket will hold. High-speed work will create a suction that holds back the sludge and advances the bucket ahead of the flow, thus inviting damage to the sewer and equipment.

Drainage Work

From time to time we worked persistently to lower the ground-water level. At first we were only able to open drainage brooks, and with the aid of the Union County Mosquito Commission did much work in relieving spots where storm waters collected. We began a campaign to secure right-of-way for storm sewers and have built some of them, with most surprising results. During routine work, we have searched for bad leaks. In one case an 8-inch private sewer was found which had a broken section where it crossed an open brook. This fed the full capacity of the opening into the sewers in wet periods. We also found an antique manhole outfit where an 8-inch pipe had been installed in the river, presumably to flush out a siphon underpassing the river. This 8-inch pipe was entirely open and the gate-valve regulating the flow from the river was rusted out. We lowered the river and plugged the pipe permanently.

We found a new housing development in a



CRANFORD SEWER-CLEANING CREW WITH MACHINE USED

section where storm water was held up. Each one of these houses had the usual 4-inch sewer clean-out in the cellar floor. In the spring, storm water collected in the vicinity, for want of an outlet, and of course these clean-outs were all opened and each one might contribute 150,000 gallons per day into the sewer system. We immediately built a storm sewer, so that the clean-outs need to handle no more overtime work.

A more recent case was in a new development where six houses were built and five cellars dug across a well-defined drainage brook in a valley, in spite of our request that the property be drained before occupancy. When later a sewer for these houses was asked for, we refused to construct it until complete right-of-way was delivered to us for a storm sewer to drain the land. These houses all had cellars full of water, and their sewer clean-outs were waiting for the sanitary sewer to drain the surface water. This storm sewer is now being built.

COLLECTION OF MATERIAL CLEANED FROM SEWER AND REMOVED FROM MANHOLE BETWEEN NORTH AVENUE AND THE RAILROAD, CRANFORD

Another important improvement was made to one of the river dams. The dam was originally built with a private boat landing on one side. We bought the land for park purposes, demolished the boat landing and rebuilt the dam with nearly ten feet more spillway. Before this was done, the banks at this spot were washed away at least once a year, but since the dam was remodeled, no trouble has been encountered and the high-water line is much lower. We are steadily on the lookout for drainage obstructions and leaks and are pushing storm sewers as quickly as possible.

A recent discovery showed three houses connected to an old sewer about which we knew nothing. On digging it up we found it flowing nearly full of surface water in a steady flow. We could not trace its source or discharge, but expect to rebuild it, cut off the two ends, and connect it up properly with manholes.

I do not believe that roof leaders and cellar drains form as serious an overload as is generally believed. If cellar drains are located in very wet spots where surface water collects in great quantities, a suitable storm sewer to dispose of the surface water will help the situation without necessarily depriving the house owners of means of drying their cellars. There are houses in Cranford where a cellar drain to the sanitary sewer is essential to occupancy of the house, and results show that the prompt removal of the ground water in the neighborhood makes it possible to avoid the cutting-out of such necessary drains.

We have found that the annual cleaning at certain places is essential and that a thorough cleaning of a sewer after a street is improved by paving is absolutely necessary. This is due to the deposit of various materials in the sewer during construction and to the entrance of sand and gravel in making private house connections to vacant lots in advance of improvements.

ACKNOWLEDGMENT.—From a paper read before the New Jersey Sewage Works Association, at Trenton, N. J.

A New Park and Playground Given to Los Angeles, Calif.

FOLLOWING her gift of the site known as "Mount of Olives," at Hollywood Boulevard and Vermont Avenue, to the city for park and playground purposes, Miss Aline Barnsdall, philanthropist and civic leader, has offered an adjacent site, valued in excess of $300,000, to be used as a park and playground, and operated by the Los Angeles Playground and Recreation Department.

The original gift, designated now as Barnsdall Park, was of approximately $1,000,000 value and has already been put to use by the founding of "the little lattice playhouse," where bi-weekly programs are given by dramatic groups of boys and girls.

The second offer, made in the belief that the children should have a site for their use adjoining the exquisitely landscaped park, would not only give the city an added and valuable area but include a building that is well suited to carry on playground programs in music and esthetic dancing, for which Miss Barnsdall has further offered the salary of an expert director for ten years.

—From *The Playground*, September, 1927.

Roadside Planting, and the Lack of It

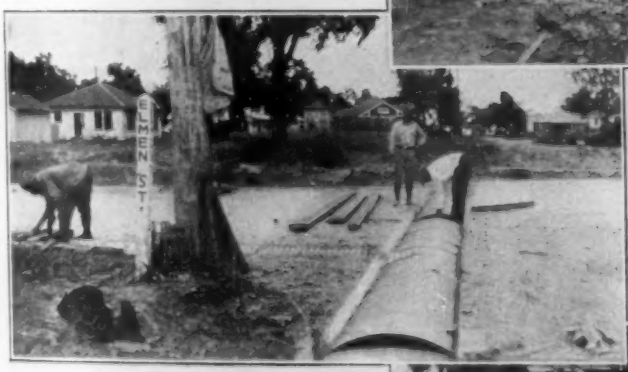
Through the courtesy of "American Forests and Forest Life," the magazine of the American Forestry Association, Washington, D. C., The American City is enabled to reproduce the two photographs here shown, as a striking contrast between the presence and the absence of trees bordering the roadways. The upper view illustrates beautiful woods-like planting on private land adjoining a main highway near Bakersfield, Calif. The other, taken in southeastern Pennsylvania, shows that absence of plant growth contributes to a desolate appearance in that region as surely as on the western plains. These pictures appear in the above magazine in conjunction with an article entitled "Street and Roadside Trees," by Furman Lloyd Mulford, who traces the historical development of roadside planting and describes the leading trees adapted for this purpose, both in cities and in rural districts, in various parts of the United States

THE CORNER OF ELMEN AND VERMONT STREETS, HOUSTON, TEXAS, AFTER COMPLETION OF THE PART-CIRCLE STORM DRAINS, IS SAFE TO TRAFFIC AND PLEASING TO THE EYE. THIS ECONOMICAL PLAN MEETS THE REQUIREMENTS OF A HIGH-CLASS GROWING RESIDENTIAL DISTRICT

How Houston Drains a Street Intersection

These Views Show How a Street Intersection Was Made More Sightly and Safer for Vehicular Traffic as Well as for Pedestrians

Preparing the base for 31 x 5-inch Armco part-circle culverts, at Vermont and Elmen Streets, Houston, Texas. This intersection required 158 feet, including two main gutter lines along Elmen Street and four laterals from Vermont Street



The part circles were fabricated in short lengths which were easily and quickly anchored in place. City Inspector Gordon, in the leather boots, says that three men placed the lengths and concreted over them, completing the job in four hours

The culverts were given a cover two inches thick over the crown. With this protection the culverts are strong enough for any load, and form a durable waterway having ample capacity yet requiring only seven inches of head room

THE NEW FILTER PLANT AND BOTH OLD AND NEW RESERVOIRS OF THE TRYON WATER-WORKS
At left, old reservoir; center, new filter building; right, new reservoir

The Water-Supply of Tryon, N. C.

By George W. White
Harwood Beebe Co., Spartanburg, S. C.

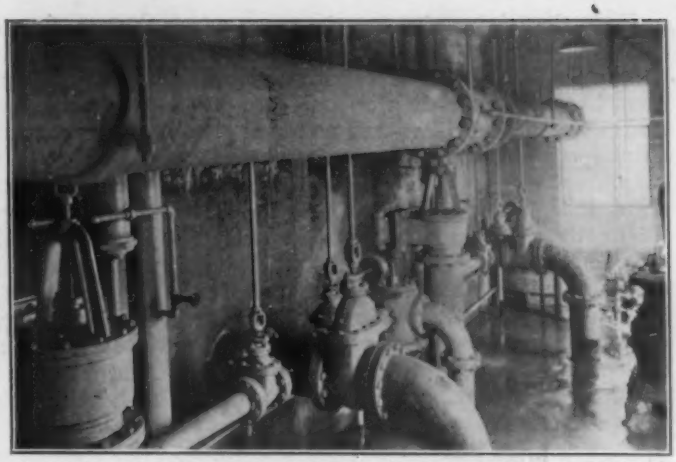
THE first water-works of Tryon, N. C., were built twenty-five years ago by a private company, water being taken from a small branch on the western edge of the town. A 4-inch pipe line, extending down Hog Back Mountain road, carried the water into Tryon. After a decade this system was purchased and operated by the town, but it soon proved inadequate and a more modern system was constructed ten years ago. Water was taken from two branches on Rocky Spur, and a 4-inch pipe line was laid to a stone reservoir of 120,000 gallons capacity. The reservoir was built on Piney Mountain on the southwestern edge of Tryon, and water was carried into the town in a 6-inch line.

This system was well planned and supplied the needs of the town as they existed in that time. In a few years, however, the demand for water exceeded the available supply and an enlargement was necessary. In 1924, the town authorities retained the Harwood Beebe Co., of Spartanburg, to thoroughly investigate the water situation with reference to present and future needs. In accordance with the engineer's report, it was decided to add a third branch on Rocky Spur to the water-supply and to build a 200,000-gallon concrete reservoir near the old reservoir to be used in conjunction with the latter.

INTERIOR OF THE FILTRATION PLANT, SHOWING DRY FEED CHEMICAL APPARATUS AND CONTROL EQUIPMENT FOR FILTERS

The years 1924 and 1925 were exceptionally dry, and the run-off of all streams in this territory became very low. Tryon also experienced a rapid increase in population, and these factors combined to render the enlarged water-supply again inadequate. In the summer of 1925 there was a shortage of water and coincident with it a popular demand for an ample supply. The engineers recommended a gravity supply, taking the water from Little Fall and Big Fall Creeks, and the construction of a one-million-gallon-daily filtration plant. Prop-

erty was purchased on Long Fork and Colt Creeks to insure facilities for any future expansion that might become necessary. From the first it was realized that a filter plant would be required to treat the water, as it would have been impracticable for the town to own and control watersheds sufficiently large to supply the quantity of water required. The city adopted the recommendation, and bonds to the amount of $150,000 were issued to defray the cost of construction and the laying of some much-needed pipe lines in town, in the distribution system.



A VIEW OF THE PIPE GALLERY IN THE FILTER BUILDING, SHOWING ADEQUATE NATURAL LIGHTING

Supply Lines and New Plant

After water rights had been purchased from a private company on Big Fall Creek as well as Long Fork and Colt Creeks, construction was undertaken. Small intake dams were constructed on Little Fall and Big Fall Creeks. An 8-inch cast iron pipe line 3.4 miles long was laid to bring the water to the plant. The capacity of this line is one million gallons per day. The old 6-inch line from Rocky Spur was connected with the new line at the plant, thus keeping in service the old intakes and pipe lines.

The old stone reservoir was enlarged and converted into a coagulation or settling-basin. The filtration plant, with a daily capacity of one million gallons, was constructed between the settling-basin and the concrete reservoir built in 1924. Thus all parts of the old water-supply system were utilized.

Water enters the filtration plant through a 12-inch pipe and is discharged into a mixing chamber along the back of the plant in which the purifying chemicals are mixed with the water. Hydrated lime and powdered alum are the chemicals used. The lime is to maintain the alkalinity of the water, and the alum to coagulate the particles of suspended and dissolved matter in the water so as to hasten its precipitation and thus assist the filtering process. The chemicals are applied to the water by two dry-feed machines.

THE COAGULATING BASIN AND FILTER BUILDING OF THE NEW TRYON WATER-WORKS

From the mixing chamber the water passes through a pipe to the farther end of the settling-basin, which has a retention period of four hours. While in the basin the water passes through a stilling-wall and then slowly to the other end of the basin, through a skimming-weir, and finally through a pipe into the filter building again.

The filter building is of brick and concrete and is fireproof throughout. It is 29 feet wide and 40 feet long and two stories in height. There are two filters, each having a capacity of 500,000 gallons daily. Each filter is provided with an 18-inch layer of gravel and a 27-inch layer of sand, as well as with operating valves and loss-of-head gage and a rate controller, which regulates the rate of flow and maintains a uniform rate of filtration.

After passing through the filters, the water is carried to the clear-water reservoir, which provides a storage capacity of 200,000 gallons, and just as the water leaves the filter building chlorine is added by a chlorinator of the latest type. The old chlorinator is to be moved to the filter building and installed as a standby unit to be used in case of emergency.

A wash-water tank of 40,000 gallons capacity has been built on the hillside just above the filter building. A complete chemical and bacteriological laboratory has been installed as part of the filter plant. All necessary tests of the water can be made in this laboratory by the operator.

A complete bacteriological, chemical and physical analysis of the water, made by the State Board of Health of North Carolina, shows the raw water to be very clear, of low turbidity and bacterial count. No B. coli were found in less than 10 cubic centimeters. A small amount of carbon dioxide, 2 parts per million, is present, indicating only a slight inconsequential amount of organic matter. The filtered water shows no B. coli present in 30 cubic centimeters.

Distribution System

A new supply main was laid from the reservoir to town, and additional mains were laid in the town itself. The supply main consists of a 10-inch line with two 8-inch branches. This supplements the old 6-inch line and delivers much more water than the old pipe, which has been left intact. The mains laid in town are in line with the general plans of improving and enlarging the entire distribution system as occasion requires.

Previously the water-works were operated on a flat-rate basis, which proved very unsatisfactory financially, as it is impossible by this method to place the cost of water where it belongs. So, along with other improvements, meters were installed on all services. All consumers are now paying for water actually used.

The Harwood Beebe Co., of Spartanburg, S. C., were consulting engineers in charge of the design and construction. Kelly Wilson & Co., of Asheville, N. C., were general contractors, and the Roberts Filter Manufacturing Co., of Darby, Pa., were contractors for the filter equipment.

Obligatory Jail Sentences for Drunken Drivers in Minnesota

DRUNKEN drivers, hit-and-run motorists, and all other classes of reckless drivers are subject to heavy penalties under the new Minnesota highway traffic act. In outlining the scope of the new law, the State Highway Department calls attention especially to the section which provides that:

"Any person who drives any vehicle upon a highway in willful and wanton disregard of the rights of others and in a manner so as to endanger or be likely to endanger any person, shall be guilty of a gross misdemeanor."

The maximum penalty for a gross misdemeanor is one year in jail, but in the case of a person driving while under the influence of intoxicating liquor or narcotics, there is no option of a fine, and the minimum jail sentence is ten days.

Furthermore, the drunken driver, for the first offense, shall be prohibited from operating any motor vehicle for three months. For subsequent offenses, he shall be barred from driving for not less than three months nor more than one year. If he is a licensed chauffeur, he shall forfeit his license.

The sections against reckless and drunken drivers are not limited to drivers of motor vehicles, but include drivers of "any vehicle." A "highway" is defined as every place open to the public for purposes of vehicular travel.

As a further curb on drunken or reckless driving, the new law provides that the court may issue an order prohibiting any person convicted under either of these sections of the law, from driving any motor vehicle on the highways, for a period not to exceed two years, unless he shall have filed a bond for $2,500 for the benefit of any person who may be injured by the negligence or unlawful act of such driver.

The new law provides that the driver of any vehicle involved in an accident resulting in injury or death or property damage, shall immediately stop and give his name, address, and license number to the person struck or the driver or occupant of the vehicle collided with. In case of their incapacity to receive such information, the driver must communicate with the police. He must also furnish reasonable assistance to any person injured in the accident, including carrying him to a doctor or hospital, if necessary or if requested.

Failure to comply with this section of the law, in case of any accident resulting in an injury to a person, is declared a gross misdemeanor. In an accident resulting only in property damage, failure to observe this section is made a misdemeanor.

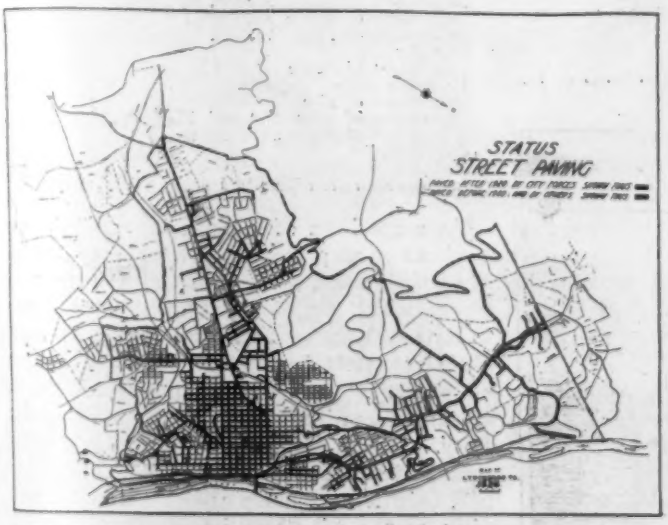
Making Municipal Reports More Readable

IT is a canon of good literature that matter and manner are inseparable, there being no such a thing as a good story badly told. Annual reports have not heretofore laid strong claims to being good literature, and even when recording exceptional efficiency in municipal administrations have been too often dull and tedious affairs, unattractively turned out and consisting mainly of columns of figures. They have provided reading mostly to those who have some unavoidable concern with such matters as the cost per person for keeping the city's poor, the number of tuberculin suspects among cows examined by the board of health, or the footage of curb gutter laid.

Gradually, however, there has come about the conviction that municipal administration is, and increasingly should be, the concern of all the citizens; that somehow there is a responsibility on the part of the municipality to provide for itself and its transactions just that element of human interest which will render its annual report attractive and informative reading. Some cities would almost seem to have accepted the challenge that if their reports are not widely interesting there must be something the matter with the administration, and are issuing records worthy to be read, then kept at hand to be consulted on occasion, and finally put away as an account of a year of community life and progress. (Be very certain that little Johnnie will never part with his copy so long as the page containing his photograph as a member of his playground ball team remains recognizable!)

A SECTION OF MAIN STREET, LYNCHBURG, BEFORE IMPROVEMENT

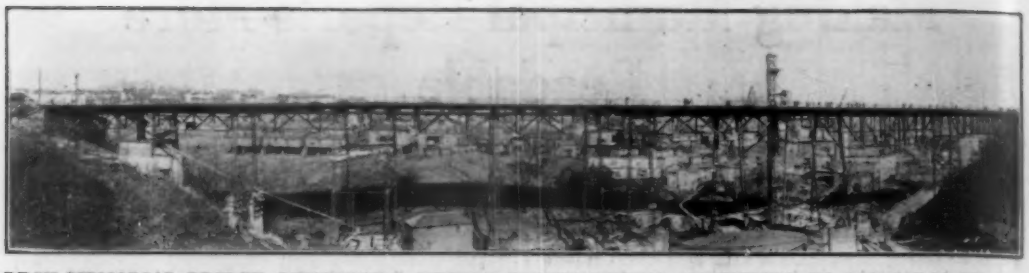
A VIEW OF THE SAME SECTION, AFTER IMPROVEMENT



STREET-PAVING MAP ON WHICH ARE INDICATED 59,285 SQUARE YARDS OF NEW MACADAM, BUILT AT A COST OF $43,258.89, IN ADDITION TO OTHER IMPROVEMENTS

(As published in the Lynchburg report, this map and the other illustrations reproduced are considerably larger than here shown)

An excellent illustration of this changed status of report-making is to be found in the Annual Report of the City of Lynchburg, Va., for the fiscal year ending January 31, 1927, recently circulated. This is a substantial 8 x 11-inch publication bound in stiff orange paper with a sepia print of the new War Memorial as a cover decoration. The tabulations of figures showing where the city stands financially are augmented and rendered effective by the use of graphic records illustrating the relative distri-



BECK MEMORIAL BRIDGE, LYNCHBURG, BEFORE EXPENDITURES AMOUNTING TO $440,807.99 IN 1926 HAD BEEN MADE
It was formerly known as the Rivermont Viaduct

BECK MEMORIAL BRIDGE AS IT APPEARS TODAY
One of the items to which the Mayor of Lynchburg points with pride in his annual message

bution of expenditures from city revenues, while the growth of the city's various services and assets for a twenty-year period is illustrated by comparative graphs.* The report is profusely illustrated with photographs, including "before and afters" of some conspicuous examples of betterment, some of which are here reproduced in smaller size.

*These include a chart headed "Twenty Years' Growth," showing a graphic comparison of certain Lynchburg statistics for 1926 with those for 1906. In a letter to THE AMERICAN CITY, City Manager Hart says:

"In preparing this chart we adapted to our use the suggestion illustrated in the report of Flint, Mich., and carried in your columns. We are glad to give full credit to THE AMERICAN CITY in its very successful effort to disseminate the ideas and experiences of other cities in the conduct of various municipal activities."

THE LYNCHBURG BUREAU OF ELECTRICITY CENTRAL ALARM SYSTEM FOR THE FIRE AND POLICE DEPARTMENTS IS HOUSED IN FIRE-PROOF QUARTERS

The table of contents, which follows, will give an idea of the effectiveness with which the material has been organized:

Official Directory
Mayor's Message
City Manager's Statement
Organization Diagram
City's General Progress
General Finances, subdivided under 8 headings
Department of Law
Purchasing Office
Department of Public Works
City Planning Commission
Zoning Commission
Department of Public Service, subdivided
Department of Water, subdivided
Department of Public Welfare
City Farm
Department of Police
Probation Office
Department of Fire
Department of Recreation and Playgrounds
Department of Parks and Forestry
City Cemetery
Auditor's Statement
In Memoriam (A tribute to a public official, deceased)

As a specimen of "human interest," the attendance at all playgrounds, community houses, swimming pools, and miscellaneous recreation places, which totaled 321,013, is analyzed down to terms of skating races, pushmobile contests, ukelele concerts, baseball games in the big new athletic stadium, and story-telling hours, with a round dozen illustrations to aid in telling the story. Among the most attractive photographs contained in the report are those of the athletic field built from a dumping-ground, before and after scenes of street improvements, and a double-page illustration showing the splendid stretch of Beck Memorial Bridge with the accompanying view giving its appearance

when it was Rivermont Viaduct, a hideous stretch of skeleton iron work.

The foreword to the report, by Mayor Walker Pettyjohn, to the Members of the Council, transmitting to them the document submitted to him by the City Manager, R. W. B. Hart, is filled with gratification for the whole progress shown, for achievement in the various departments and, in his own words, "for the high privilege that has been accorded me to preside over a body that has worked together so harmoniously and with such single-hearted purpose to serve our people."

Here, then, is an annual report which will attract the eye. No Lynchburger will let it pass from his hands unexamined. Examining it, he will find it a concise, adequate and most attractive account of his city at work. And if some day a citizen reading some such report as this becomes suddenly convinced that the government of his city is a more splendid instrument than he had thought, it will be a sign, perhaps, that report-making has arrived at the status of literature.

EDITORIAL NOTE.—"A List of References on Municipal Reporting," compiled by O. F. Nolting, Municipal Reference Bureau, University of Kansas, 1927 (see THE AMERICAN CITY, June, 1927, page 859), offers a variety of sources of information on this subject, while "Making the Annual Report Effective" in THE AMERICAN CITY, December, 1925, page 590, contains practical suggestions in brief. Among the best general works on annual reports are "The Preparation of Reports," by Ray P. Baker; "Charts and Graphs," by K. G. Karsten; and "Graphic Methods for Presenting Facts," by W. C. Brinton. Useful data also appear in "The Government of American Cities," by William Bennett Munro; "Assets of the Ideal City," by Charles M. Fassett; and "Principles of Government Accounting and Reporting," by Francis D. Oakey.

THE COURT STREET DUMP, LYNCHBURG, BEFORE IMPROVEMENTS WHICH TRANSFORMED IT INTO A PARK PROVIDING RECREATION FACILITIES FOR BETWEEN 7,000 AND 8,000 PEOPLE

MUNICIPAL ATHLETIC STADIUM ON THE SITE OF THE COURT STREET DUMP

Knowledge of the Source of Municipal Income and Object of Expenditures Essential as a Guide for Efficient Municipal Government

By William M. Steuart

Director of the Census

The American City has been of great service to the Bureau of the Census in its campaign for uniform governmental statistics of receipts and expenditures of cities. This campaign has now been in progress since 1903, but because of the difficulty of securing from each city the data necessary to a uniform report, the work has been confined to cities that have a population of 30,000 and over, of which there were 250 in 1926. It is important that the statistics be extended to smaller cities, but this cannot be done until there is greater uniformity in the classification of revenues and expenditures, and until city officials display a greater desire to cooperate with the Federal Government in this work.

The Bureau has been endeavoring to secure in each city the services of an agent familiar with the local system of accounting to prepare the reports. If such arrangements can be made for a majority, if not all, of the cities having over 30,000 population, it will be possible for the Bureau to collect statistics on this important subject for practically all of the cities in the United States, thus establishing an index that will admit of a satisfactory comparison that will show not only the source of the revenue in each city but also the various objects for which it is expended.

P & A Photo

THE LOCOMOTIVE OF A 60-CAR FREIGHT TRAIN CRUNCHED THROUGH A TROLLEY CAR AT A WEEHAWKEN, N. J., GRADE CROSSING RECENTLY, INJURING 35 PASSENGERS AND LEAVING THIS PILE OF SPLINTERED WOOD AND TWISTED STEEL

The Menace of the Grade Crossing—Protected or Unprotected*

ANOTHER traffic job of the first magnitude on which our cities and states have as yet largely fallen down, is the abolishing of railroad grade crossings. There were on December 31, 1926, according to the records of the Interstate Commerce Commission,† on the railroads of the United States, a total of 234,280 highway grade crossings. Of these more than 88 per cent—206,433 to be exact—were unprotected with any gate, signal or watchman. At the 27,847 "protected" crossings the kinds of protection afforded and the number of casualties during 1926 were:

Crossings Protected by	Number of Crossings	Number of Accidents	Persons Killed	Persons Injured
Crossing gates	6,148	227	100	175
Crossing watchman	7,760	603	195	718
Audible and visible signal	6,427	216	143	270
Audible signal	5,308	406	216	460
Visible signal	2,204	262	119	269
Total protected crossings	27,847	1,714	773	1,892
Unprotected crossings	206,433	4,148	1,718	5,099
Total grade crossings of highways with railroads	234,280	5,862	2,491	6,991

An analysis of these figures shows that at the protected crossings the average for the year was one accident for each 16 crossings, as against one accident for each 50 of the unprotected crossings. This is due in part, of course to the fact that the more heavily traveled crossings are as a rule the protected ones, but the fact that 773 persons were killed and 1,892 injured last year at "protected" grade crossings in the United States is a strong reason for preferring abolition to protection.

Analyzing the 5,862 grade-crossing accidents

*This article comprises part of a paper on "Have Our Cities Fallen Down on Their Traffic Job?" presented by Harold S. Buttenheim, Editor of THE AMERICAN CITY, at the National Safety Congress in Chicago, on September 29, 1927. The other principal subjects discussed were the need for safety education of motorists and pedestrians; the lack in most cities of effective coordination of local efforts for traffic control and facilitation; the need in most states for more adequate and uniform laws for licensing of operators and the regulation of vehicles on the highways; and the importance of more drastic action by the courts in the revocation of licenses for driving when under the influence of liquor and for chronic carelessness or disobedience to traffic rules.

†The figures here quoted are from the forthcoming Accident Bulletin for the calendar year 1926 of the Interstate Commerce Commission, and have been furnished to THE AMERICAN CITY through the courtesy of M. O. Lorenz, Director of the Commission's Bureau of Statistics.

of 1926 as to persons and vehicles affected, we find the following totals:

	Number of Accidents	Persons Killed	Persons Injured
Pedestrians	519	293	241
Passenger automobiles	4,078	1,766	5,350
Autobusses	31	15	106
Autotrucks	861	281	902
Motorcycles or bicycles	26	18	13
Trolley cars	36	1	151
Animal-drawn vehicles	153	49	126
Other vehicles or machines	10	2	12
Pedestrians passing over or under trains or cars	27	7	20
All other grade crossing accidents	121	59	70

An amazing fact disclosed by another of the Interstate Commerce Commission's tabulations is that of the 5,862 accidents listed above, more than 1,100 were caused by vehicles *running into the side of trains.*

Our automobile marksmen are evidently fairly expert in attacking a locomotive or railroad car, whatever may be their skill in hitting the side of the proverbial barn!

Grade Crossings Increasing in Number

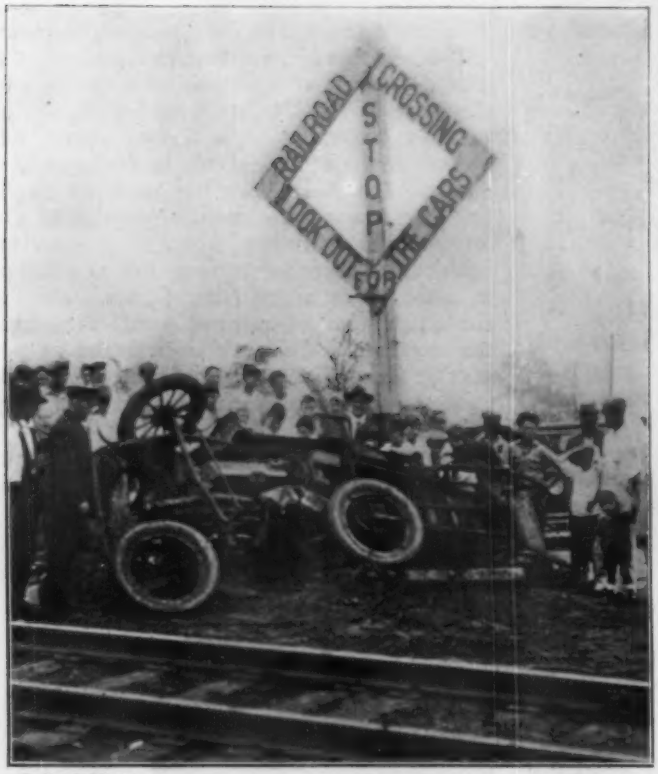
Another surprising fact disclosed by the Commission's figures is that there was an actual increase in number of highway grade crossings on Class 1 railroads last year. Grade crossings to the number of 1,184 were constructed on these roads during 1926, while the number eliminated was 1,158, of which only 195 were eliminated by the separation of grade.

It has been estimated that to abolish all the grade crossings of railroads with streets and highways in the United States would cost at least $20,000,000,000. No one, of course, advocates any such expenditure in the immediate future. But New York has made an excellent start towards a state-wide program by the adoption, in November, 1925, of a constitutional amendment authorizing the Legislature to issue bonds aggregating $300,000,000 for the elimination of railroad grade crossings, the expense of the work to be borne 25 per cent by the state, 25 per cent by the municipality and 50 per cent by the railroad company affected.

Any comprehensive program of grade separation, to accomplish the greatest good in sav-

THE CROSSING GATE

This grim warning is adapted from a cartoon by Enright, in the New York "World" for August 26. The figures given are the lives lost from accidents at grade crossings of highways with railroads in 1926, as reported to The American City by the Interstate Commerce Commission. In addition to the 2,491 deaths there were 6,991 persons injured



P & A Photo
THE "PROTECTION" DID NOT PREVENT THE CATASTROPHE

ing life and expediting traffic, ought not to be restricted to railroad crossings. In many cases the separation of grades at intersections of highways with other highways would have much greater economic and humanitarian value than the abolition of crossings of minor railroad lines. Accidents and delays at street crossings are responsible for so many of our traffic ills that we must look forward to large and increasing expenditures throughout the United States for the separation of grades at the intersection of vehicular ways.

How a Safety Campaign Could Stimulate Business Prosperity

A nation-wide impetus that will grip the popular imagination and open the public purse must be given to the campaign for grade-crossing elimination before any substantial progress can be made. There is one way, at least, in which with the backing of the National Safety Council and other powerful organizations, I believe this could be done:

Unless the past is no guide to the future, the generally prosperous conditions now prevailing throughout the United States will be followed, some time within the next few years, by a period of business depression. One of the best means of minimizing such "hard times" when they come, and of re-stimulating industry and employment, will be to have a well-planned program of public works ready to set going with the aid of state and municipal funds. Why should not the abolishing of grade crossings be made a major factor in such a carefully prepared plan? Engineering studies; determination of proper division of costs between states, municipalities and railroads; the voting of funds to be available when the emergency arises—these and other measures of preparedness in times of prosperity are dictated, I am sure, by considerations of sound public policy.

Why Not Arbitrate Traffic Accident Cases?

AN opportunity for lawyers to encourage the arbitration of traffic accident cases, and thus to relieve the courts of a considerable share of their recently augmented business, with advantage to all concerned, is suggested in the *Journal of the American Judicature Society* for August, 1927. To quote in part:

"Arbitration under statute is not something alien to judicial administration, but a part of it, and arbitration procedure is in the fullest meaning of the term judicial procedure. A proper statute concerning arbitration adds to the facilities possessed by courts as well as extending the freedom of contract in a logical way.

"Consider the situation growing out of traffic accidents: All over the land there is a perfect welter of litigation in which accustomed modes of adjudication leave much to be desired. Claims based on torts are as amenable to arbitration as contractual claims. Equal success can be expected in accident cases as in contract cases under arbitration procedure. The trouble has been that we have had no means for bringing the parties to traffic accidents to the right kind of procedure to serve their needs. But it is hard to believe that this difficulty will not be eventually overcome and a better habit inculcated. It would seem timely for automobile owners' associations to create arbitration committees and lend their influence to bringing about a change in practice."

Better Measurement Standards Suggested for Public Works Departments

By Clarence E. Ridley, Ph. D.

IN general, statistics on public works activities have been of little value for purposes of comparison between cities. This has been largely due to existing lack of uniformity in the standards of measurement and the confusion in interpreting those standards which appear uniform. To cite but one of many examples, some figures on pavement construction work are expressed as cost per mile for different types of specified pavements, while others appear as cost per square yard. Obviously, either basis of measurement is valueless, for it ignores many factors necessary to a comparison of statistics.

Again the present indifference to the value of more standardized specifications makes the comparison all but impossible. Finally, there are always present those variable factors characteristic of each community which if left out of consideration render the comparison valueless.

Suggested methods of measuring the customary activities of a public works department will be discussed according to the following functions; streets, street cleaning, snow removal, street lighting, sewers, refuse collection and disposal, and water-supply.

1. Streets

a. *Pavement Construction.*—The three main items and the common standards of measurement are: first, excavation (cubic yard), which is classified into earth, loose rock, solid rock, etc., depending somewhat upon the geological formation of the particular locality; second, curbing and headers (lineal foot), which may be of stone or concrete, and if of concrete, it may be straight curbing or combined curb and gutter or the gutter may be from a few inches in width to two feet; third, pavement proper (square yard), which includes foundation and wearing surface. In one-course pavement, obviously there is no separation of these two items. Two-course pavements are probably the more common, and hence the necessity for distinction.

Obviously, it is difficult to compare the cost of pavements on the basis of either the square yard or lineal distance. In the first place, both dimensions ignore the excavation required before the subgrade is even ready for the actual construction of the pavement. After eliminating the excavation, then, the square yard measurement is to be preferred because the lineal distance measurement entirely disregards the width of the pavement. It is apparent that a pavement forty feet in width would require no more curbing than one sixteen or twenty feet wide; consequently, even the square yardage basis alone is misleading. With the amount of curbing remaining constant, the cubic yardage cost would automatically decrease as the width increased. Other instances could be cited to show that there is no one standard of measurement for pavement construction but the excavation, curbing, and pavement proper must all be used to arrive at true comparisons.

Of course, specifications are fundamental and even exceed in importance the standards of measurement. A specification is a highly technical instrument. Changing a word or two may mean a considerable variation in the cost. To draw comparisons between costs without a careful analysis of the rules and regulations which so largely determine the cost would of course be the height of folly. Then, too, the distance of the work from the source of raw material is an important factor in arriving at comparable figures. Labor cost, also, must be taken into account. Pavement con-

Measuring Municipal Government

The accompanying article comprises most of Chapter VI* of a forthcoming monograph on Suggested Standards for Measuring the Results of Fire, Health, Police and Public Works Departments. In a foreword by Russell Forbes, Director of the Municipal Administration Service, it is pointed out that:

"Students of government have always lacked definite criteria with which to measure the effectiveness of municipal administration. Until definite criteria or norms are formulated and applied, citizens will continue to appraise their city government on the basis of prejudice or partisanship rather than on the basis of administrative results. . . . The suggested criteria may not be applicable to a municipality without modification to suit peculiar local conditions. The report is presented as a worth-while analysis of the present status of the problem, with full expectation that it will suffer the usual fate of a pioneer."

* The complete report, an 80-page monograph, which will bear the title, "Measuring Municipal Government," will soon be obtainable (at 25 cents per copy) from the Municipal Administration Service, 261 Broadway, New York, or the School of Citizenship and Public Affairs, Syracuse University, Syracuse, N. Y.

Dr. Clarence E. Ridley, the author, has had a long and varied experience in municipal administration. He was four years in Flint, Mich., as Assistant City Engineer; two and one-half years as City Engineer in Port Arthur, Texas; and four years as City Manager of Bluefield, W. Va. He holds the degrees of Bachelor of Civil Engineering from the University of Michigan; Master of Arts in Public Finance from Columbia University; and Doctor of Philosophy in Government and Public Law from Syracuse University.

struction costs are comparable if those factors listed above are given due weight and if the above three standards of measurement are applied. On any basis which overlooks these factors, such figures become meaningless.

b. *Pavement Repair.*—The standards given for construction are applicable in pavement repair—square yardage for the pavement proper and lineal feet for curbing. The type and age of pavement should of course be considered. One should also distinguish whether the repair includes the foundation or is merely a surface patch. If the repair consists simply in the filling of expansion cracks in concrete, or surface patching of asphalt and macadam pavements, the cost per ton of material used and the per lineal distance would serve well as standards of measurement.

A rough measurement of the whole activity showing the yearly trends for any particular city would be the total cost per mile for the "modal age" of the entire pavement mileage. Such factors as labor cost, raw material cost, and haulage distance, mentioned under pavement construction, are of course applicable here as well as in practically all activities of a public works department. To avoid repetition they will be omitted under the other activities discussed below.

c. *Maintenance of Unpaved Streets.*—This is meant to include the maintenance of only those streets in the city which have been excavated and accepted as a public way. If excavation work is to be done, however, it should be measured on the basis of cubic yards. Unpaved streets of a city commonly require grading or smoothing with a road drag in the spring and after rains, clearing of drainage gutters, and dust prevention treatments. All three of these activities are susceptible of measurement per foot, or if the job is large, preferably per mile. The dust prevention work might in some cases, such as wide boulevards or streets, be measured by the square yard. In short, the total mileage of unimproved streets graded or dragged, gutters cleaned and dust prevention application, whether such work occurs on the same street or not, will afford figures comparable for all practical purposes.

d. *Sidewalks and Crosswalks.*—For both construction and repair of sidewalks and crosswalks, the standard of measurement is invariably the square foot. This unit is preferable to a lineal measurement because of the great variations in the walk widths. Here, too, the specifications are all important, since thickness and concrete mixture vary greatly from city to city.

2. Street Cleaning

Here the standard of measurement is 1,000 square yards, or preferably the "great square" of 10,000 square yards. Even with agreement on the basis of measurement, the figures by themselves mean little on account of the conspicuous lack of uniformity in yardage computation. Some cities include the entire width of the pavement in the yardage figures when merely the gutters have been swept with hand brooms. Either an allowable standard width should be agreed upon, say three feet, or such cleaning should be computed on the basis of lineal distance. Inasmuch as square yardage is the accepted standard for other methods of cleaning, it is suggested that a standard width of one yard be allowed for each gutter. This is wider than the space actually swept, but the extra allowance will compensate for the occasional collections at some distance from the curb.

Uniformity is also necessary in regard to computing the yardage covered by horse-drawn brooms and motor sweepers. Certainly one trip each way on a street thirty feet wide with a broom sweeping an eight-foot strip does not clean the entire street. Therefore, the yardage should be computed on the basis of the area actually covered by the broom.

In the case of motor flushing, if the water cleans the entire width of the street, then the entire width may be computed; otherwise only that part actually cleaned. Obviously, the sweeping gangs which sometimes accompany the flushing crews should not be credited with yardage if the motor flusher was credited with the entire width. Yardage should, then, be computed on the basis of what is actually cleaned, whether by hand, broom or flusher and this figure should be expressed in great squares of 10,000 square yards.

Other factors greatly influence both costs and methods used. Some of these factors are: grade of streets; type of pavement; character and amount of traffic; whether cleaning is done by day or by night; quantity and character of the refuse; paved or unpaved intersecting streets; and, lastly, the standard of cleanliness required. These factors need no elaboration. It is sufficient to add that any comparison of either costs or methods without their consideration will be misleading.

A possible solution would be to classify the costs under the methods used—motor flushing, hand flushing motor pick-up, horse-drawn equipment, or gutter gang. These data should all be expressed on the basis of cost per great square, and supplemented with a record of the total cubic yardage of refuse removed and cost incident thereto for each operation separately reported.

Under such a plan, with due consideration of the facts already stressed, an approach to comparable figures will be realized.

3. Snow Removal

Several standards of measurement are sometimes used in the handling of snow. The clearing of sidewalks with a plow which simply forces the accumulation to either side should be computed on the basis of lineal distance covered, preferably the mile.

In clearing roadways by pushing the snow from the traffic way the standard should be per mile for the different widths cleared.

For the process of removing snow from the streets the standard used is the cubic yard.

These measurements may be misleading, however, for they all ignore the effect of depth and weight of the snow. The snow may be light and flaky, or it may be heavy, wet and freezing as it is being handled. Such factors as the succession, intensity and depth of the various snowfalls, character of the snow and the weather conditions immediately following the fall of snow make comparisons of this activity extremely hazardous, and for that reason suggested costs per units are comparable only for a given snowfall.

4. Street Lighting

The almost total lack of uniformity in methods of street lighting makes comparisons for this activity very difficult. Little agreement exists even among authorities in the field. Obviously, the cost per light and the cost per mile of street are valueless without a knowledge of the type, spacing

and candlepower of the lights in use. There are in reality few factors which should determine the amount of illumination necessary. The most important and controlling factor is the character of business and traffic adjacent to and over the various streets. If, therefore, a standard lighting requirement for the several types of streets is adopted, comparisons in cost made with reference to such standards would be of considerable value.[1] Due consideration should of course be given to such other obvious factors as cost of production and delivery of the power to the locality to be served.

5. Sewers

a. *Construction.*—Several standards of measurement must be applied to sewer construction work in order to arrive at comparable figures. The excavation is computed on the basis of cubic yards, classified as explained under pavement construction. The pipe in the trench is measured by the pipe's lineal foot and interior diameter. The manholes, which vary greatly in depth, are usually computed per foot of depth from the top of casting to the flow-line of the sewer. Catch-basins, being as a rule uniform in depth, are computed by the number.

Of course the size of the sewer is all-important. Obviously, other things being equal, the larger the pipe, the more expensive the sewer, for the cost of excavation and laying, as well as cost of pipe, will be increased. The price for excavation invariably includes also the replacement of the excavated material.

The character of material and depth of excavation will naturally vary a great deal. Cost per lineal foot of sewer of a certain size is therefore valueless. The standards given above, however, will serve as reliable criteria if the kind of pipe or other material such as brick, concrete and segment block are specified and the other factors heretofore listed are observed. A knowledge of the specifications covering both the material and the method of construction is also essential for an intelligent comparison.

The four main standards of measurement to be considered in sewer construction are, then: excavation (cubic yard), sewer pipe (lineal foot), manholes (per foot depth), and catch-basins (each).

b. *Maintenance.*—Cleaning of the catch-basins, flushing of the sewer lines and repairing of occasional breaks, comprise the chief maintenance items. The per-basin standard of measurement is used for cleaning catch-basins. A figure indicative of the other maintenance items would be the cost per mile of the average size of the pipe in use in the sewer system as a whole. The "average" size would be the diameter of that pipe having the same length as the combined length of all the various sizes in use, and with the same cubic contents.

6. Refuse Collection and Disposal

The two general classes of municipal refuse are garbage, the standard of measurement of which is the ton, and rubbish and ashes, which are usually figured by the cubic yard. To make the figures more comparable it is advisable to separate each of these two branches of the work into the three distinct operations of collection, hauling, expressed in ton-miles for garbage and cubic-yard-miles for ashes and rubbish, and disposal based on the same measurement as for collection or loading. Here, too, many variable factors must be considered in making comparisons. For example, the ultimate disposal of the material will greatly affect the total cost. Greater care in collection must be exercised if the garbage is to be fed to hogs, to avoid the inclusion of dangerous and poisonous material. Such factors as the character of the refuse, size and nature of the district served, and whether containers are taken from rear of house or from curb line, all influence the cost of collection; while the distance from disposal point, traffic conditions, size of trucks used, all affect the cost of hauling. With attention to these variables and others previously mentioned, figures of material value should result.[1]

7. Water-Supply

Water-works plants with few exceptions are owned and operated by the municipalities. Water-supply is therefore selected for discussion here under the general heading of public works. The two phases of this subject warranting treatment are extensions to the distribution system and the operation of the entire plant.

a. *Extensions.*—Per mile of certain size pipe is usually the standard of measurement in making extensions to the distribution system of a water-works. This standard is feasible, since a fairly uniform depth is maintained in laying water-mains, depending largely on depth of frost line. In sewer work, on the other hand, a certain slope to the sewer line must be maintained regardless of depth.

However, as there are different grades of pipe according to the pressure desired, the class of pipe used must be known as well as the depth laid. The cost of the hydrants and valves, which vary in price according to make, size and quality, should be computed on the basis of installation per unit. Given a knowledge of the character of the earth formation, figures of considerable value can be obtained on the basis of lineal distance for certain size of water-main of a certain depth.

b. *Operation of Plant.*—The uniform standard of measurement for water is the U. S. gallon. While some cities use the cubic foot, this unit can be easily transposed into gallons. In production the unit "million gallons" is used, while distribution to consumers is on the basis of a thousand gallons.

To compare the cost of water to the consumer in various cities is practically useless as a criterion of the efficiency of operation. For example, some cities are fortunate enough to have artesian wells within the city limits as the source of their water-supply. Such supply may require neither treatment nor pumping before entering the distribution mains and thence going to the consumers. On the other hand, other cities must go miles for their source of supply, take it from a muddy and filthy river, and pump it under a high pressure to an expensive purification plant for elaborate and costly treatment before the water can be allowed to enter the mains.

These factors make comparisons worthless unless the different operations are separated into a

[1]For such a classification see Appendix XXXI, "Report of Committee on Street Lighting," *Proceedings of the American Society for Municipal Improvements*, 1925-26, p. 247.

[1]For a full discussion of unit costs for refuse collection and disposal see Hering and Greeley, "Collection and Disposal of Municipal Refuse," McGraw-Hill, New York, 1921, 653 pp. Pp. 231-235 contain the "Standard Form for Statistics of Municipal Refuse" which was presented at the annual meeting of the American Public Health Association, Havana, Cuba, December, 1911.

suitable and uniform classification. It is therefore suggested that the cost figure of delivering water to the consumers should be based on the following main items: source of water-supply (the cost of getting the water to the first pumping-station); delivery to the purification plant; cost of purification; and distribution costs. Such a classification with a uniformity of items under each main heading would give valuable data on the cost of water per million gallons.[1]

The American Water Works Association has prepared a comprehensive outline of the "Essential Statistics for Annual Reports of Water Works," which undoubtedly will serve a very useful purpose as soon as a sufficient number of water departments issue their reports in conformance to it.[2] Mention should also be made here of the "Outline of Score System" prepared by a Committee of the New England Water Works Association, which is restricted merely to the scoring of water-supplies from the standpoint of sanitation and has no direct application to the problem as it is herein discussed.[3] The Grading Schedule of the National Board of Fire Underwriters, which is reviewed in the chapter on fire protection, includes certain standards required for fire fighting.

[1] See Appendix XXXII, covering the complete classification used by the department of water supply of the City of Detroit. From the *Seventy-Third Annual Report of the Board of Water Commissioners*, for the year ending June 30, 1925.

[2] See their *Manual of Water Works Practice*, 1926, pp. 621-633.

[3] See *Journal of the Association*, v. 40, no. 3.

Finally

The development of useful and practical measurement standards for the activities of a public works department presents difficulties at variance with those met in the other departments, in that public works has a less definite objective. It should also be noted that public works activities involve material and equipment to a much greater extent, thus necessitating the consideration of more varied factors.

The writer believes that more accurate measurements of public works activities await a more minute and detailed functionalization.

Some Puzzling Problems of Real Estate Appraisal

IN a recent communication to THE AMERICAN CITY, J. M. Cleminshaw, of the Cleminshaw Appraisal Co., of Cleveland, Ohio, points out the fact that, in the minds of the uninitiated, an appraisal "expert" is often one "equipped with a fine set of formulas, who looks over a property, cubes it, applies the magic figures, and presto! the result is an accurate and reliable valuation."

A suggestion that he outline for the benefit of THE AMERICAN CITY's readers some of the complexities of scientific real estate appraisal, has brought from Mr. Cleminshaw the following reply:

"Although ideals demand justice and fair treatment for all, we generally delegate the equitable appraisal of millions of dollars' worth of property—the very foundation of our taxing system—to some poor, underpaid assessor who struggles along trying to keep property values equalized without adequate knowledge or properly trained help, the result being gross inequality. Our assessing system in this respect is archaic.

"In appraising real estate for tax purposes one must bear in mind the basis of valuation and the paramount requirement that all values shall be as equitable as human skill and knowledge can attain.

"The equitable appraisal of land is not so difficult as that of buildings. The establishment of front-foot values for a certain depth and the working-out of corner influence and depth factors is comparatively simple. Local authorities under proper supervision can be relied upon to do a fairly satisfactory job.

"The appraisal of readily salable buildings, such as dwellings and business properties, must be based on a combination of (1) cost to replace new, less depreciation, (2) rent capitalization, and (3) good sound judgment, taking into consideration, location, desirability, obsolescence, and inadequacy.

"Generally speaking, the fair sale value of modern well-designed, well-located dwellings is in direct proportion to their physical value. This, however, will not apply to the over-ornate, 'gingerbread' house built during the past civil war period, nor to beautiful and expensive residences in what has become a boarding-house district.

"In the matter of commercial structures, some business blocks will sell for twice their cost to replace new less physical depreciation, while others will not bring half that amount, depending chiefly upon location and desirability. An old building may return a greater net income than a new building, yet sell for less; the reasons for this, however, are obvious.

"In the case of manufacturing plants, except in a very few instances, obsolescence is always present. It is true chiefly of plants that started in a small way and expanded as requirements demanded, resulting in a more or less inadequate layout that would seldom be duplicated if the same capacity plant were being built new. Then there are cases of over-expansion resulting in a lot of surplus construction, and, again, there are the sad cases of completely defunct plants for sale at a small fraction of their going-concern value. Between these extremes we have manufacturing concerns struggling for an existence, often taxed far above their true proportional worth.

"Taking the appraisal of real estate as a whole, the technical knowledge of costs, cost analysis, life of materials, modern construction, etc., is of little value unless backed by sound judgment and a sense of responsibility, loyalty and fairness both to the municipality and to the property owner."

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives and Others

Through Street "Stop" Signs Serve Dual Purpose in San Francisco

SAN FRANCISCO, CALIF.—New illuminated traffic signals now being erected in San Francisco by the California State Automobile Association serve the important dual purpose of marking thoroughfares designated as arterial or through traffic streets and of showing street names. Each sign bears on its face the words "Stop—Arterial" and on its reverse the name of the intersecting street. They are the Phillips-Carter flasher type signal, with a brilliantly illuminated flash which enables them to function equally well night and day.

The motorist approaching an arterial street at an intersection, is warned of the "stop" regulation by the face of the sign confronting him at his right, while the reverse side of the corresponding sign on the corner diagonally opposite shows him the names of the intersecting streets.

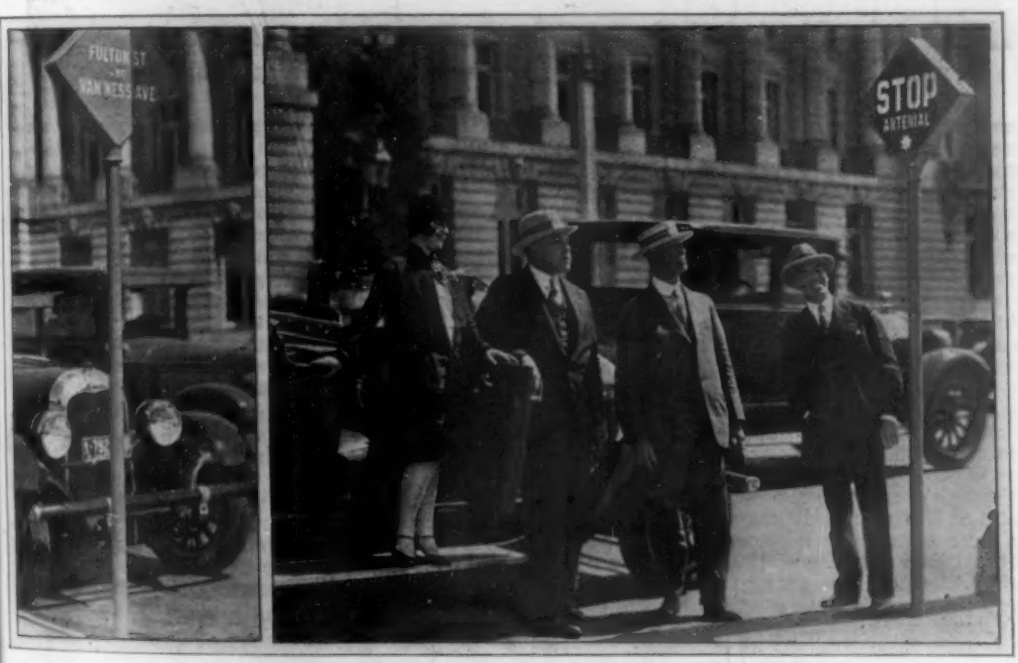
Starting on Geary Street, and between Masonic Avenue and Forty-second Avenue, the Association is placing 500 of these signs for the city on the various arterial streets. These were ordered by the Board of Supervisors, arrangements for their erection, according to our plan, having been made by the traffic committee, which consists of Supervisors Charles F. Todd (Chairman), Walter J. Schmidt, and Edwin G. Bath, in cooperation with Captain Henry Gleeson of the Police Traffic Bureau.

Several other through streets on which intersections will be marked by these new illuminated flasher-type signs have been designated by the supervisors. These new signs, added to the already famous yellow-diamond road and street sign system projected by the California State Automobile Association, are expected to contribute not a little to the facilitation and safety of automobile traffic in San Francisco.

JAMES W. JOHNSON, Chief Engineer,
California State Automobile Association.

Motor-Busses Versus Street Cars

ALEXANDRIA, LA.—Communities of 25,000 to 50,000 that have the question of transportation to solve will be interested in the experience of the city of Alexandria, the fourth largest city in Louisiana, with an urban population of 23,433 in 1926 and a



ONE OF THE NEW DUAL-ROLE FLASHER TYPE TRAFFIC SIGNALS IN SAN FRANCISCO AS IT APPEARS FROM THE ARTERIAL STREET (LEFT), AND FROM THE INTERSECTING STREET ON WHICH TRAFFIC MUST COME TO A FULL STOP

Left to right: **Miss Edna Monk; Supervisor Charles F. Todd, Chairman of City Supervisors' Traffic Committee; Captain Henry Gleeson, Commander City Traffic Bureau; and Ralph W. Wiley, City Electrician**

metropolitan population of 35,000 at this time.

Alexandria's utilities—electric light and power, water, gas and transportation—are municipally operated. The city has the commission form of government, with three commissioners. The Department of Safety and Health is operated by the Mayor; the Department of Public Utility, by the Commissioner of Finance; and the Department of Streets and Parks, by a civil engineer.

The city tax assessment is 9¼ mills, the city government receiving 4 mills of this amount toward the operation of all its affairs, earning the balance needed for the operation of the city from its public utilities. The remainder of the tax, 5¼ mills, goes for general improvement purposes.

For a number of years the city of Alexandria operated a street-car system, which consisted of ten cars of the one-man type covering about nine miles of single-track belt line and two extensions. The receipts from fares on these street cars amounted to about $100 a day, whereas the cost of operation was about $140 to $160 per day.

Citizens of Alexandria, as well as the public officials themselves, were not satisfied with this means of transportation, which was becoming more and more restricted each year as the city spread, and there was a constant demand for a more modern method of transportation. Mayor J. F. Foisy and Commissioners V. M. Ake and R. W. Bringhurst cast around for information concerning the operation of street cars and busses in similar-sized communities, taking special pains to study motor-bus transportation, both as a supplement to the street-car system and as a substitute for it.

After studying the matter for a year, the Commission Council unanimously decided upon the substitution of motor-busses for the street cars, and had a number of street-car busses visit Alexandria for demonstration purposes. The people of Alexandria "took to" the busses and, by a heavy majority, voted for the substitution of busses for street cars.

Although one or two busses operated during the months of November and December, 1926, the street cars were not entirely discontinued until January 1, 1927. Since that time the busses have been operating daily at less expense than the street cars, though there are the same number of busses covering a territory practically three times the size of the territory covered by the street cars.

The following comparison showing the number of passengers carried by street cars and busses, with the street cars operating at a 6-cent fare and the busses operating at a 7-cent fare, is of interest to students of transportation:

	1926	1927	Increase
January	47,298	52,386	11%
February	41,002	71,477	74%
March	47,683	86,728	82%

Increase in passengers during 1927 over 1926:

January	5,088
February	30,475
March	39,045

Daily average of passengers carried:

	1926	1927
January	1,526	1,690
February	1,465	2,553
March	1,538	2,797

Not only has the substitution of motor-busses for street cars given an improved transportation service that has been made available to a greatly increased number of citizens, but it has caused many people who formerly used automobiles, to leave their cars at home and ride in the bus instead. It has helped to develop the suburbs and open up new residential sections that formerly were inaccessible to street-car service. Such sections of the city have added forty new residents of the cottage or one-family type within a period of six months. Another section has shown a similar improvement, all of which means new property values for Alexandria and new consumers of electric light, water and gas. Assessments are thereby also increased, bringing increased revenues for the city of Alexandria and the various municipal institutions.

FLEET OF MACK BUSSES OPERATED BY THE MUNICIPALITY OF ALEXANDRIA, LA.

The new service has permitted the city authorities to pull up iron rails which prevented the proper paving of streets, and to tear down unsightly overhanging wire supports, has also brought about the improvement of unpaved and partly graveled streets by brick paving and proper subsurface drainage.

On a number of streets where the street cars operated the citizens formerly took no interest in cleaning up their premises, because of the dust raised by the street cars. Since the removal of the cars and the rails and the paving of these streets with brick, the citizens have taken new interest and pride in their homes, resulting in the beautification of several sections of the city and the substitution of modern homes for uncared-for residences.

Both the Mayor of Alexandria, J. F. Foisy, and the Alexandria Chamber of Commerce will gladly furnish information to any one interested in the substitution of motor-busses for street cars in improving a transportation system.

GEORGE C. MERKEL,
Secretary-Manager, Alexandria Chamber of Commerce.

Dallas Enlists the "Young Idea" to Make Scientific City Planning Effective

DALLAS, TEXAS.—Sixteen years of experience with the city plan prepared for Dallas by the late George E. Kessler having yielded the axiom that "it's hard to put a new idea into an old head," a shift in fundamental tactics has recently been made by those most interested—and a concentration of effort on "new" heads. A book, "Our City—Dallas; a Community Civics," has been published by the Kessler Plan Association, an educational institution of Dallas, as the basis of a new campaign of civic righteousness in general and specifically as a textbook for use in the seventh grade of the city schools. This manual has been prepared by Dr. J. F. Kimball, head of the Department of Education of the Southern Methodist University, who was for ten years head of the Dallas schools and is widely known as an author and a scholar.

This book, well made and profusely illustrated with photographs, maps, and charts, discusses in a clear, readable way the duties and responsibilities of citizenship, and the backgrounds, structure, and form of city and county government as well as the underlying principles of city planning and the factors entering into the growth or the decay of a city or of some section of a city. While written for children, the book is expected to be widely read by adult citizens; and, although dealing with Dallas problems, it is already proving itself of interest to civic workers, chamber of commerce leaders, city officials, and forward-looking citizens in cities of Texas and elsewhere.

The manner in which this book was made possible fittingly epitomizes the kind of community cooperation essential to the enterprise it seeks to further. The author devoted eighteen months of his time without pay to writing "Our City—Dallas." The literary critics, the proof-reader and other workers gave their services, and printer, engraver, and binder each did his part of the work on a below-cost basis. The bookstores are handling the publication without commission; the newspapers gave space to announcements; the

A CONTRAST IN TREATMENT OF CREEKS
Above, an unimproved portion of Mill Creek; below, part of Turtle Creek Boulevard. From page 279 of "Our City—Dallas"

A CONTRAST IN LAND VALUES AND BUILDING DEVELOPMENT
Lack of street openings, and insufficient restraint on skyscraper construction have contributed to the great difference between foreground and background of this picture, which is from page 132 of "Our City—Dallas"

Chamber of Commerce, luncheon clubs and other organizations are helping to sell copies; and civic leaders, including laboring men, business and professional men, are buying copies. All receipts of sale over the actual cost of the book go toward paying for the school edition, which is furnished free and which, it is hoped, may at a later date be placed in the schools of the entire county as well as of the city.

An indication of the kind of reception the book is receiving outside of Dallas is shown in Houston, where Will C. Hogg, Chairman of the Planning Commission, followed the purchase of a $10 autographed copy with an order for 22 other copies for distribution among the Houston citizens who are cooperating in the city planning campaign. And Houston is only one of a score of cities from which orders of the book in the $1.50 or the $2.50 edition have been received in response to a multigraphed announcement sent out.

E. H. CARY,
President, Kessler Plan Association.

New Street Signs Help Passersby

INDIANAPOLIS, IND.—Believing that efficient street signs are practical advertisements of a city to strangers within her borders, Indianapolis has recently installed a new system of markers that show not only the names of intersecting streets at a glance, but also the number of blocks from the dividing lines of the city. The system has proved satisfactory and is the subject of favorable comment by strangers and residents.

Following the practice in vogue for a number of years, the electric power company receiving the street-lighting contract also received a contract from the city to purchase, install, and maintain street signs on light posts at street intersections. This method has relieved the city of much labor, as can be seen, and it has been demonstrated through the years that the signs are maintained in better condition and at a lower cost than if the city endeavored to do the work itself. The present contract, signed in 1924, continues for ten years.

A "TWO-IN-ONE" SIGN IN INDIANAPOLIS

THE METAL SHIELD ON THE STANDARD DESIGNATES AS A THROUGH HIGHWAY THE STREET ON WHICH THIS POST STANDS

Since there are some intersections in the outlying districts that as yet have not light posts on which signs could be erected, the city itself places markers; but it is provided in the contract that the company must place a sign whenever a light is installed.

Indianapolis is divided into four segments by Washington Street, running east and west, and Meridian Street, running north and south. Block numbers, then, begin at each side of Washington Street and at each side of Meridian Street. All north-and-south thoroughfares extending south of Washington Street assume the prefix "south," and all extending north, the prefix "north." In a like manner all ways extending west of Meridian Street assume that directional prefix and all east, the prefix "east."

A glance at the illustrations accompanying this article will show the value of the "two-in-one" sign. A stranger, by looking at the Fifty-seventh Street sign, learns from the numerals just above that he is fifty-seven blocks north and at College Avenue and Fifty-seventh Street. Looking at the College Avenue sign he knows that he is at College Avenue and is seven blocks east of the dividing line.

A second advantage is gained when passing motorists have only to look at the sign nearest them to ascertain the names of both streets, the sign as shown carrying both the name of the main street and that of its intersector.

Just below the street sign, as one illustration shows, is an enameled metal shield designating the particular street as a through highway. These shields appear at regular intervals to aid the visiting motorist in holding a course through the city. The highway markers were erected by the State High-

way Commission and are the regulation marker for through Federal highways.

The street signs, made to specifications set forth by the city engineering department, are uniform in size and lettering, except in the case of the latter when the street name contains more letters than the regulation letter-width will permit. Then the letters are contracted. The signs bear black letters and numerals on a yellow background. They are of the best quality porcelain enamel on 1/16-inch sheet steel. Both sides and all edges are enameled with two coats of yellow porcelain enamel and one coat of grip enamel burnt in at 1800° F. The colors are guaranteed by the maker not to fade. The sign plate is 31 x 6⅛ inches in size. The oval above the main plate is 9½ x 5 inches.

All material entering into the make-up of the signs is of medium-grade open-hearth steel with an ultimate strength varying not more than 4 per cent above or below 60,000 pounds.

EUGENE M. REID.

Buffalo Adopts a New Charter

BUFFALO, N. Y.—After nearly twelve years' trial, Buffalo has definitely given up commission government, the electors having approved a proposed new charter at a special election on August 29. The new charter sets up a strong-mayor type of government, provides for a council of fifteen consisting of nine from districts, and five, with the president of the council, from at large, and separates the administrative service into eleven departments. The mayor is given wide powers of appointment, subject in some instances to confirmation by the council, and he will also enjoy the veto power.

Both sides carried on a very spirited campaign during the month of August. Defenders of the commission government charter pointed to what they claimed to be a wonderful record of achievement during the past twelve years in schools, parks, playgrounds, harbor development and water-supply, and insisted that any worth-while features could be added to the existing charter by amendment.

Advocates of the proposed charter called attention to the trebled city budget and assessments under commission government, pointed out that there have already been over 180 amendments made to the existing charter without much improvement being seen, and stressed the many fine administrative provisions of the new document.

The vote on the new charter was 53,041 divided as follows: for, 32,079; against, 20,962.

The present Mayor and one Commissioner hold over for two years until the expiration of their present terms. Councilmen under the new charter will be selected by party nominations and elections this fall, and the charter becomes effective January 1, 1928.

HARRY H. FREEMAN,
Director, Buffalo Municipal Research Bureau, Inc.

Lincoln Statue a Gift to Urbana

URBANA, ILL.—Out on the prairies of Illinois at Urbana stands a statue of Abraham Lincoln that artists declare in time will rank with the famous Lincoln of Saint-Gaudens which stands at the south entrance of Lincoln Park, Chicago. The Urbana statue is the work of Lorado Taft, noted sculptor and at one time a resident of Urbana. It was constructed through a fund of $12,000 especially provided for the purpose by the late Judge and Mrs. J. O. Cunningham, personal friends of Lincoln.

Professor Taft's parents were close friends of the Cunningham family, and as the two families visited back and forth young Taft heard them repeat stories that Lincoln had told upon the occasion of his visits to Urbana to practice law. As the years passed and young Taft became famous, he considered the subject of Lincoln as having been fully handled by noted sculptors and never thought of adding one of his statues to the list. When the committee of three provided in the Cunningham will was appointed, however, one of them was Judge F. S. Boggs, who had been a law partner of Judge Cunningham and knew of the intimacy that had existed between the Taft and Cunningham families. To him—and the other two men—Taft was the one logical person to prepare an appropriate statue of Lincoln for Urbana. The sculptor considered that the location called for a younger Lincoln, the courageous good-humored lawyer who used to come to Urbana and tell his stories as he tried his cases: "No martyr president was needed here; no 'man of sorrows.' So the standardized bowed head was forgotten and my hero seemed actually to rejoice to once more straighten out his neck."

GEORGE CHAPIN, Managing Secretary,
Urbana Association of Commerce.

THE LINCOLN STATUE BY LORADO TAFT STANDS IN URBANA, ILL.

Spartanburg Takes a Flyer in Airport Finance

SPARTANBURG, S. C.—A new flying field has been financed in Spartanburg, by cooperative effort under the leadership of the Chamber of Commerce in a manner not only completely satisfactory to taxpayers and others concerned but at an outside cost that is exceptionally low.

Coincident with the official announcement that the Post Office Department had made Spartanburg an air-mail stop, the city began preparations for the establishment and equipment of a municipal airport. An airport committee of the Chamber of Commerce, with J. C. Grier as chairman, was empowered to select, get options, and make recommendations to the city officials. This committee enlisted the cooperation of the experts from the Aeronautics Division of the Department of Commerce and of the officials of the commercial company holding the contract to carry the mail. When the situation was effectively canvassed, the choice narrowed down to two possible tracts, and on the day of the purchase, the committee was able to escort the City Councillors on a tour of inspection of these cities, discussing the advantages and disadvantages of each.

The site selected consists of 105 acres of exceptionally level land within three miles of the city, and was purchased by the city for approximately $20,000. Grading work, consisting of leveling old plow furrows, was done by city forces at negligible costs. The field, shaped roughly like an airplane, offers incoming planes two runways of the "T" type, one 2,700 feet in length and the other 2,560, the longest running in the direction of the prevailing wind. Irregularities in the boundary lines provide ample space for the construction of hangars, shops, etc.

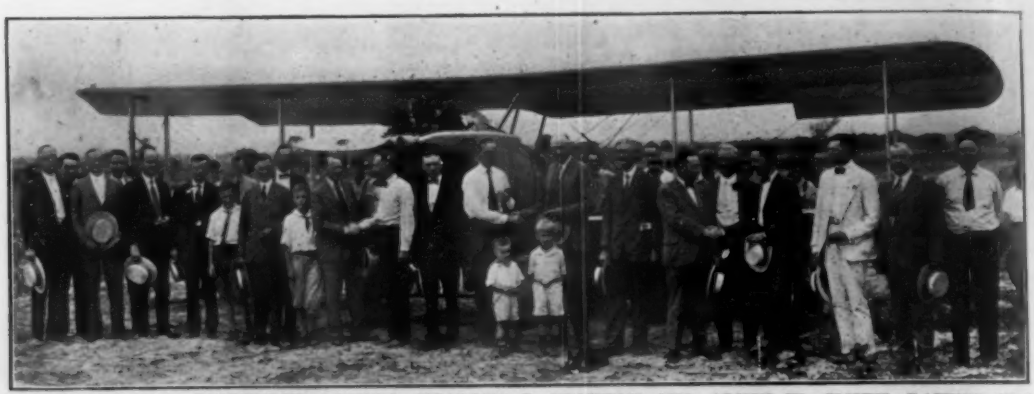
The county, with its numerous important textile plants outside the city limits, naturally expected to share the benefits of the investment and willingly subscribed $5,000 to provide beacon lights and floodlights for the field, at the same time authorizing its highway department to construct two miles of surface-treated road, to cost about the same amount, linking the field with the two paved state highways between which it lies. Thus, a seven-mile circle of road, arranged for the free flow of traffic, links airport and city by two distinct routes.

The commercial company which is to carry the mail will, under the terms of its contract, build hangars at a cost of $5,000 on the field and provide for the maintenance of grounds, in addition to paying the city an annual rental of $500, a sum judged sufficient to cover the cost of lighting the field adequately. This contract with the mail-carrying company permits the city to make similar contracts with other commercial companies, and this the city expects to do.

The popularity of the field is already established. In addition to the commercial company, which has $6,000 of construction work well under way, four private plane owners expect to use it, two of them having already established planes on the grounds, and Major Herbert A. Dargue, leader of the Pan-American Good Will Flight, and Walter O. Lochner, President of the National Association of Commercial Organization Secretaries and Secretary of the Trenton, N. J., Chamber of Commerce, having visited it in their tour of this country. They were welcomed by a crowd of 7,000 people, all of whom are now air enthusiasts.

At the time of its official opening, September 10, Spartanburg had a municipal airport costing $36,000, a sum considerably less than it was thought a fully equipped airport would cost, and of which only about $20,000 came direct from the city coffers, all helping to make possible the only municipal airport in the state.

R. B. BEAL,
Secretary, Spartanburg Chamber of Commerce.



DEPARTMENT OF COMMERCE AGENTS, CHARLES I. STANTON AND ALVIN W. SMITH, LAYING OUT NEW YORK-ATLANTA AIRLINE, ARRIVE IN SPARTANBURG AND ARE WELCOMED BY CITY AND CHAMBER OF COMMERCE OFFICIALS

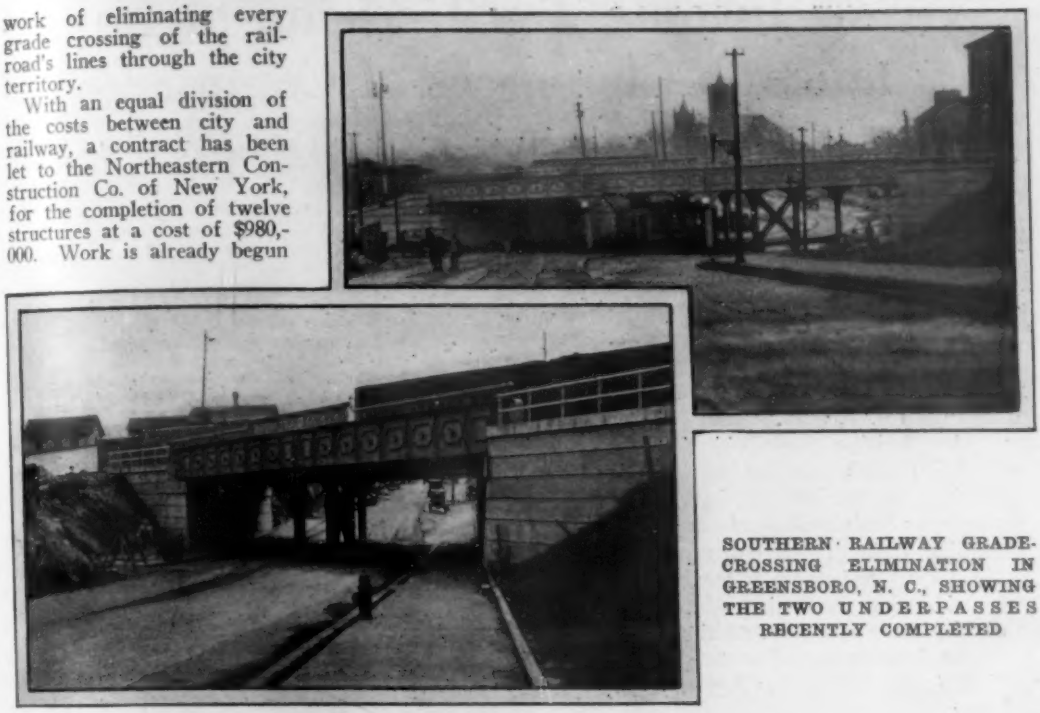
J. C. Grier, chairman of the Chamber's committee on aviation, stands directly in front of the plant motor. At his right H. A. Ligon, President of the trade body, shakes hands with Mr. Stanton (in shirt sleeves), and at his left Hon. Ben Hill Brown, Mayor, shakes hands with Mr. Smith (in shirt sleeves)

A Notable Achievement in Grade-Crossing Elimination

GREENSBORO, N. C.—Encouraged by the unqualified success of its negotiations with the Southern Railway, its main unit of transportation, in the matter of securing a new station and in constructing street underpasses flanking it on either side, the city of Greensboro, 50,000 population, has through its City Council definitely entered into the

work of eliminating every grade crossing of the railroad's lines through the city territory.

With an equal division of the costs between city and railway, a contract has been let to the Northeastern Construction Co. of New York, for the completion of twelve structures at a cost of $980,000. Work is already begun



SOUTHERN RAILWAY GRADE-CROSSING ELIMINATION IN GREENSBORO, N. C., SHOWING THE TWO UNDERPASSES RECENTLY COMPLETED

and will be pushed to completion in 300 working days, the construction to be in stages so that no adjoining projects will be under way at the same time and so that loopholes will be left for traffic between points of operation. Included in the program is construction of seven underpasses of the rail lines, three overhead bridges, the widening of an existing underpass and construction of one footbridge. Several of the underpasses are at the convergence of two streets. Effort is made to care for all traffic needs, and where the new and wider passes are provided to draw traffic from unimportant crossings, these will be closed. Since the Southern Railway, outside of one small line, is the city's sole rail transportation agent, the new program means the practical end of the crossing evil in Spartanburg.

The Northeastern Construction Co. secured the contract in competition with 25 other concerns, the high bid coming nearly double that of the low one. The concern was the builder of the two underpasses which flank the station, these two costing around $400,000, of which the city paid a fourth. Between the two is the new $1,000,000 structure erected by the Southern at this terminal point, the station having been completed by the Consolidated Engineering Co., of Baltimore, in April.

The architects and engineers for both the station and the underpasses are Felheimer and Wagner, of New York. All underpasses in the new program will resemble the two just completed, in that heavy steel members will rest on reinforced concrete steel pillars supporting the center.

E. B. JEFFRESS,
Mayor.

NEW SOUTHERN RAILWAY STATION, GREENSBORO, N. C.

A New Income Tax Decision of Importance to Chambers of Commerce

Contributions to Industrial and Publicity Funds Not Deductible by Members as a Business Expense

CONTRIBUTIONS to a chamber of commerce fund to be raised for industrial and publicity purposes in the furtherance of building up a city are not allowable deductions from gross income under sections 214 (a) 1 and 234(a) 1 of the Revenue Act of 1926, according to a recent decision of the Income Tax Unit, I. T. 2375.

The decision also held that amounts included in such contributions or paid as membership dues or fees to the chamber of commerce by individuals and corporations are allowable deductions from gross income, provided the membership is employed as a means of advancing the business interests of the individual or corporation making such payments.

The decision in full text as published in the *United States Daily* for September 6, 1927, follows:

An opinion is requested regarding the deductibility for income tax purposes by subscribers of amounts contributed to what is known as the "development fund," to be used by the M Chamber of Commerce for certain purposes.

It appears that the chamber of commerce of the city of R has undertaken a five-year program which it states is to help all lines of business in that community. It is planned to raise and expend through the chamber of commerce of the city of R the sum of x dollars a year for five years for what is stated to be industrial and publicity purposes. Contributions to the fund are to include membership fees in the chamber of commerce of the city of R.

The plan proposes that the chamber of commerce, composed of representatives of every business interest, shall be reorganized, that steps shall be taken for the further building-up of a greater city of R and of its industries, and that efforts will be made to secure new industries for the city. The plan will be under the direction of an executive manager accountable to the board of directors of the chamber of commerce of the city of R. To secure a basis for the working-out of the plan, industrial engineers will be employed to make a survey of the city's industrial and commercial possibilities so that the result may be presented to the various industries of the city and to those industries which it is determined can profitably locate in the city of R. The city of R's business interests and individuals interested in the growth of the city of R territory are invited to contribute to the fund.

In computing net income there may be deducted, under the provisions of sections 214 (a) 1 and 234 (a) 1 of the Revenue Act of 1926, all ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business. Article 562 of regulations 69 provides in the case of corporations for the deduction of donations as a business expense to the extent that such donations may legitimately represent a consideration for a benefit flowing directly to the corporation as an incident to the business. The business expenses which are deductible under the sections of the statute above referred to are those incurred directly in the maintenance and operation of the taxpayer's business and not those expenses which may be beneficial or even necessary in a broader sense. That likewise is the effect of article 562 of the regulations.

In order that a contribution of the character referred to in the inquiry may be deductible by a subscriber in the computation of his income tax liability, such contribution must have, in a direct sense, a reasonable relationship to such subscriber's business. In a case in which the question of freight rates was a matter of great importance to a corporation engaged in a business which required the shipping of its products by freight, and in which the corporation faced keen competition with shippers of similar products operating in localities enjoying more favorable rates, a contribution was made by the corporation to a chamber of commerce for the purpose of securing lower freight rates with respect to the products of the corporation.

It was held that this contribution was in fact a business expense incurred in exchange for a benefit sought by the contributing corporation, a benefit which was direct and immediately applicable to the particular business of the corporation and, therefore, that the contribution might be made the basis of an allowable deduction. (G. C. M. 1437, Internal Revenue Bulletin VI-20, page 5.)

Benefits Must Be Direct

The benefits flowing to the subscribers to the fund raised and expended by the chamber of commerce of the city of R are most general and indirect, and cannot be said to have a direct or immediate relationship to any particular subscriber's business. The contributions of a subscriber do not represent a consideration for a benefit flowing directly to the contributor as an incident of his business.

It is held, therefore, that the contributions made to the fund established by the chamber of commerce of the city of R for the purposes stated, to the extent that such contributions exceed the amount of membership fees included therein are not ordinary and necessary expenses incident to the carrying-on of the business of the contributor, and, therefore, are not allowable deductions from gross income for income tax purposes. However, amounts paid as membership dues or fees to the chamber of commerce by individuals and corporations are allowable deductions from gross income, provided the membership is employed as a means of advancing the business interests of the individual or corporation making such payments.

Department of Municipal Accounting and Finance to Be Resumed Next Month

THE AMERICAN CITY asks the indulgence of its readers for the omission this month of the usual department, edited by Francis Oakey, C. P. A., on Municipal Accounting and Finance. In the present issue will be found an important article by Clarence E. Ridley on Measurement Standards for Public Works Departments, and the first of three installments of Financial Statistics of Cities for 1926. Mr. Oakey's valuable department will be resumed next month.

How Traffic Is Handled in City Manager Municipalities

THE city managers throughout the United States were recently asked by THE AMERICAN CITY to furnish, for the benefit of readers of this magazine, information as to how responsibility for the facilitation and control of street traffic is divided between the city manager and the engineering and police departments of the respective municipalities. Replies received from 140 city managers in 28 states are here summarized; CM indicating the City Manager's responsibility; CE that of the City Engineer; and CP that of the Chief of Police.

On the questionnaire form the managers were asked "What other officials, if any, have responsibility for facilitation and control of street traffic." Answers to this question are indicated by the word "Special," except that references to the customary responsibility of the city council for the adoption of ordinances have been omitted.

ARIZONA

Phoenix: Harry Reiger, City Manager.
CM—Executive head. City Commission acts in an advisory capacity.
C E—Responsible for all design for construction work and actual construction excepting street paving.
C P—Responsible to City Manager. Is in control of all police matters under supervision of City Manager.
Special: Traffic Captain and squad responsible under direct supervision of Chief of Police.

CALIFORNIA

Alameda: Clifton E. Hickok, City Manager.
CM—Responsible for police and engineering departments and hence has chief responsibility for traffic control.
C E—Installs safety devices, boulevard stop signs, traffic buttons, etc., under orders of City Manager.
C P—Enforces traffic laws by means of motorcycle officers.
Special: School Department has junior traffic squad of schoolboys to handle semaphores in front of all schools, under supervision of Police Department.

Bakersfield: James Ogden, City Manager.
CM—Whole responsibility, indirectly, as Engineer and Police Department are directly responsible to City Manager.
C E—Keeps streets in condition for traffic, making street names and traffic lines.
C P—Enforces traffic laws of city and state.
Special: All employees of Street and Police Departments share responsibility.

Berkeley: John N. Edy, City Manager.
CM—Enforcement of all laws.
C P—All traffic regulation and enforcement done under his supervision.

Glendale: J. W. Charleville, City Manager.
CM—Authority to establish markers and turning of them; in addition to this, has general supervision over the Police Department.
C E—Keeps traffic lanes open and streets repaired.
C P—Approves signs; has authority to establish and maintain signs; designates and recommends boulevard stops, crosswalks, prohibited parking and display of signs.
Special: City council is responsible for angle parking; has authority to establish signs, bus stops, cross walks and loading zones, together with the final control of police and traffic matters not directly given to Chief of Police and City Manager.

Monterey: R. M. Dorton, City Manager.
CM—Traffic control plan laid out by Manager.
C P—Enforcement of traffic control and police ordinances governing traffic.
Special: Street Superintendent has responsibility for maintenance of traffic markers, etc.

Pasadena: R. V. Orbison, City Manager.
CM—Directly responsible to Board of Directors; he issues instructions to both Police Department and City Engineer.
C E—Does the painting; checks up on condition of signs and painting; and sets the signs which the Auto Club of Southern California does not handle.
C P—Makes recommendations to City Manager; makes all traffic checks; has control of automatic signals.
Special: City cooperates with traffic department of Auto Club, which furnishes all boulevard stop signs, slow and danger signals.

Pittsburgh: Roy A. Watkins, City Manager.
CM—Does all traffic planning.
C P—Directs with manager.

Richmond: J. A. McVittie, City Manager.
CM—Prescribes locations of traffic signs, crosswalks and traffic markers, and has ordinances prepared for control of traffic.
C E—Installs all traffic signs, crosswalks and traffic markers.
C P—Enforces all traffic ordinances and facilitates traffic at congested points.

Sacramento: H. C. Bottorff, City Manager.
CM—Has general control and supervision over all administrative departments of the municipal government, including Police and Engineering Departments.
C E—Installation and maintenance of parking limits signs, and installation and maintenance of arterial stop signs.
C P—Enforcement of all traffic regulations, including both state laws and city ordinances; painting of all parking lines, safety zones, etc.; installation and maintenance of safety markers.
Special: Under the direction of the Traffic Department, groups of selected pupils assist in controlling traffic in the vicinity of important schools. This arrangement has proved very effective in safeguarding the lives of school children.

San Diego: F. R. Rhodes, City Manager.
C P—Is responsible for traffic direction by police officers and motorcycle officers and for the apprehension of violators of traffic ordinance.
Special: The Superintendent of Streets is responsible for the placing of all street signs, traffic signs and buttons, the painting of traffic directions on pavement, safety zones, and the installation of signal systems.
The Fire Chief is responsible for the operation and maintenance of the electric signal system.

San Mateo: Oscar F. Weissgerber, City Manager.
CM—General supervision only.
C E—Placing signs and marking streets for parking only.
C P—All control of traffic and enforcement of local ordinances and state laws.

San Rafael: H. K. Brainerd, City Manager.
CM—Recommends traffic control measures.
C P—Enforces traffic control measures.
Special: City Council also has responsibility for traffic regulation.

South Pasadena: A. E. Stockburger, City Manager.
CM—Is in entire charge.
C E—Advisory.
C P—In active charge of the traffic squad.

COLORADO

Boulder: Frank L. Moorhead, City Manager (Acting).
CM—Head of the Department of Public Safety, and as such has general supervision.
C E—Has charge of the physical properties and care of streets, marking of safety zones and providing safety devices.
C P—General head of Safety Department, in charge of regulation of traffic.

Colorado Springs: A. M. Wilson, City Manager.
CM—Responsible to the Council for the enforcement of all traffic ordinances, and recommends such changes as he deems necessary.
C E—Cooperates with City Manager and Chief of Police in placing traffic signs and signals.
C P—Duty of Police Department is to enforce all traffic ordinances.

Durango: Edward W. Oviatt, City Manager.
CM—Recommends regulations to the Council and after their adoption sees that the proper officers get their instructions and enforce the regulations.
C E—Advisory capacity to the Manager.
C P—Advises with the Manager, and sees that officers are properly instructed and do their duty.

Grand Junction: T. E. Thompson, City Manager.
CM—The complete handling of traffic is left to the City Manager. Have the suggested uniform traffic ordinances proposed by Colorado Municipal League.
C P—Chief of Police and patrolmen under City Manager have responsibility for enforcement of traffic regulation.

Montrose: H. C. Gilmore, City Manager.
CM—Direct control over all matters pertaining to streets and alleys, including traffic.
C P—This work is handled by the Police Department under the direct supervision of the City Manager.

CONNECTICUT

New London: Wm. A. Holt, City Manager.
CM—Has final responsibility.
C E—Covers street marking, location of beacons, etc., and preparation and maintenance of signs.
C P—Enforces traffic ordinances and supervises beacons and signs.
Special: Superintendent of streets issues permits for excavation and use of sidewalk for storage of building material.

Stratford: Carlton D. Reed, City Manager.
CM—Purchasing and general supervisory control.
C E—None, except as may be delegated by the Manager on special occasions.
C P—Responsibility for direction.
Special: The Common Council has, of course, the power to make one-way streets and to pass on general policies relative to traffic regulation. It may be interesting to note that Police Chief Wm. B. Nichols, of Stratford, believes in such a thing as over-regulation of traffic; that within certain limits traffic can regulate itself more efficiently than it can be regulated. With this in mind, on an important and rather awkward intersection we keep our traffic man up on the sidewalk. It is his duty to watch for violations rather than to regulate the traffic, which generally can take care of itself.

FLORIDA

Clearwater: Chas. F. Mason, City Manager.
CM—Is given authority by ordinance to make traffic regulations.
C P—Enforcement only.

Coral Gables: R. M. Davidson, City Manager.
CM—Outines policy of traffic control in general.
C E—No responsibility other than collaborating with Chief of Police on installation of safety signals and other problems.
C P—Is also Director of Public Safety; has the direct responsibility and active direction of traffic, and the carrying out of the details of traffic policy.

Daytona Beach: Walter A. Richards, City Manager.
CM—General supervision.
C E—Traffic study and layout.
C P—Accident record and recommendation for control installation.
Special: Superintendent of Public Works has charge of installations and traffic painting.

Dunedin: Wm. A. Smith, City Manager.
CM—Propounds certain regulations of more important character, but not included in ordinance.
C E—None, except on thoroughfare design.
C P—Enforces traffic ordinances and propounds regulations, not most important.

Fernandina: E. C. Garvin, City Manager.
CM—Final approval of plans submitted by Police and Engineering Departments jointly.
C E—Generally confined to design and layout with cooperation of police.
C P—Enforcement, maintenance and repairs. Design is discussed as to practicability and for service test on streets when considering new devices.

Fort Pierce: W. Austin Smith, City Manager.
CM—Empowered by ordinance to lay down all traffic rules and regulations.
C P—Enforcing laws and regulations and making recommendations to City Manager.
Special: Superintendent of Streets has charge of all marking under directions from City Manager.

Haines City: Jesse P. Ferrill, City Manager.
CM—Sees that proper signs and street marking are placed on streets.
C E—Sees that all streets are kept repaired.
C P—Sees that all laws and ordinances are enforced, and controls all policemen.

Hollywood: C. C. Freeman, City Manager.
CM—Responsibility under direction of Commission.
C E—Making recommendations and executing orders.
C P—Making recommendations and executing orders.

Leesburg: D. E. Bivens, City Manager.
CM—Primary.
C P—Administrative.

Melbourne: Wm. Kerlin Seitz, City Manager.
CM—Analyzes all traffic problems; makes definite recommendations to City Commission for ordinances, rules and regulations on traffic.
C E—Supervises construction of traffic marks, and location and installation of traffic signals.
C P—Enforces traffic regulations; uses own judgment in times of emergency.

Miami: F. H. Wharton, City Manager.
CM—General administrator over all city activities.
C E—Works in conjunction with Traffic Director.
Special: The city has a Traffic Director.

Palatka: Chowning Cauthorn, City Manager.
CM—Responsible directly to City Commission.
C P—Responsible to City Manager for carrying out Manager's policies and plans.

Palm Beach: L. Trevette Lockwood, City Manager.
CM—Supervision.
C P—Full charge.

Stuart: Ralph E. Mahr, City Manager.
CM—Jurisdiction over Police Department, must see that traffic laws are being enforced.
C P—Under orders to enforce traffic provision; responsible to City Manager.
Special: Commissioners also have responsibility for traffic regulations.

West Palm Beach: A. E. Parker, City Manager.
CM—Complete control and operation under authorization of City Commissioners. He delegates assistants for traffic control, parking and permits.
C P—Enforces city ordinance and City Manager mandates.

Special: Population is seasonal by about 60 per cent. Recently traffic regulation enforcements were eased as a result. It was found with the reduced population, accidents at street intersections increased by approximately 100 per cent.

GEORGIA

Brunswick: C. D. Terrell, City Manager.
CM—All traffic regulations are suggested by the Manager and if approved are put into an ordinance or resolution by the Commission.
C P—Control of traffic under the City Manager.

Cartersville: R. C. Poindexter, City Manager.
CM—Responsible for success of traffic regulations.
C P—To enforce all laws, ordinances and regulations regarding traffic.
Special: On special occasions the Boy Scouts render the city valuable assistance.

Columbus: Henry B. Crawford, City Manager.
CM—Recommends jointly with Chief of Police regulations for control of traffic.
C P—Enforcement of regulations.

Decatur: J. S. Looney, City Manager.
CM—None other than the supervision over Police Department.
C P—Sees that ordinances are inforced and that requirements are observed.

Quitman: Paul A. Tanner, City Manager.
CM—Responsibility through Police Department. City Manager determines kind and character of signals and makes purchases.
C P—Traffic under direct supervision of Chief of Police.

ILLINOIS

Winnetka: H. L. Woolhiser, City Manager.
CM—General supervision and engineering advice.
C E—None, except on design of new paving improvements.
C P—Principally responsible for regulations and their enforcement.

IOWA

Dubuque: Charles Edson Douglas, City Manager.
CM—Responsible for the enforcing of all rules and regulations regarding traffic.
C P—The Chief of Police is directly responsible to the Manager for the actual control of all street traffic.

Iowa Falls: J. O. Gregg, City Manager.
CM—None as to traffic regulations. Traffic regulations defined by ordinance, and enforcement of all ordinances, under Mayor and Chief of Police, by orders of Mayor.
C P—As defined by ordinance and under instructions of Mayor.
Special: City Council also has responsibility for traffic regulation.

Mason City: P. F. Hopkins, City Manager.
CM—Determines policies as to parking restrictions, etc., for guidance of Police Department.
C P—To carry out Manager's policies and enforce city and state laws.

Maquoketa: J. G. Thorne, City Manager.
CM—Operation of traffic signals, marking of streets for parking, etc.
C P—Enforcing of city ordinances relating to traffic.

Red Oak: Arthur E. J. Johnson, City Manager (and City Engineer).
CM—Prepares plans and specifications for all improvements.
C P—Mayor is Chief of Police in all cities of the second class in Iowa.
Special: Mayor has responsibility for facilitation and control of street traffic.

KANSAS

El Dorado: W. F. Benson, City Manager.
CM—Over all.
C P—To see that signals are working and kept in good condition, by reports to City Manager.
Special: City Commission also has responsibility for traffic regulation.

Hays: A. W. Seng, City Manager.
CM—City Manager is City Engineer and Superintendent of Streets. Is in direct cooperation with Chief of Police in locating safety zones, parking zones and directing traffic.
C E—Placing of traffic devices.
C P—Directing traffic and controlling speed.

Kingsley: S. T. Manuel, City Manager.
CM—Outlining traffic control.
C P—Enforcing traffic laws.

LaCrosse: Jess C. Mosher, City Manager.
CM—Is in full control of all city affairs, but under the City Commissioners.
C P—Enforcement of law.

Sterling: Ralph Eugene McMillan, City Manager.
CM—Holds the City Marshal responsible for all traffic regulations.
C P—Has all the responsibility.

MAINE

Auburn: Frederick W. Ford, Jr.
CM—Routing of traffic, parking regulations, etc., are studied by City Manager and Chief of Police and policy determined upon is presented to the Council for approval. The Chief of Police is then responsible for regulation and enforcement.
C P—Enforcement of regulations.

Portland: H. A. Brinkerhoff, City Manager.
CM—Executive and directional authority over all departments.
C E—With Commissioner of Public Works has charge of maintenance of traffic signals and signs and traffic painting and keeping of records.
C P—Enforcement, including assignment of traffic officers.
Special: City Manager is assisted by an unofficial Traffic Advisory Committee composed of 14 representative business men.

MASSACHUSETTS

Middleborough: H. J. Goodale, City Manager.
CM—General supervision.
C P—Chief of Police works out the details under the supervision of the Town Manager and Board of Selectmen.

MICHIGAN

Bay City: W. E. Baumgardner, City Manager.
CM—Control over Police Department which has charge of traffic.
C P—Direct charge.

Benton Harbor: Guy M. Tyler, City Manager.
CM—Responsible to City Commission.
C E—None, except as directed by City Manager.
C P—None, except as directed by City Manager.

Big Rapids: Dan H. Vincent, City Manager (and City Engineer).
CM—Has charge of all traffic, street marking and parking.
C P—City Manager is Chief of Police.

Ferndale: Carl H. Peterson, City Manager.
C P—Complete responsibility.

Grand Rapids: Fred H. Locke, City Manager.
CM—All administrative functions of the city.
C E—Director of Public Service is responsible for construction and maintenance of highways.
C P—As delegated by Director of Public Safety, who is responsible for all police service.

Grosse Pointe Shores: A. H. Bennett, City Manager (and Chief of Police).
CM—Complete responsibility.

Iron River: Peter Walraven, City Manager (and City Engineer).
CM—Supervises Police Department.
C P—Full responsibility.

Ironwood: W. M. Rich, City Manager.
CM—Directs Division of Police to control traffic.
C P—Division of Police has control.

Jackson: Fred R. Harris, City Manager.
CM—Has direct control of Police Department.
C E—Incidental.
C P—Entire responsibility.

Kalamazoo: Albert TenBusschen, City Manager.
C P—As Director of Public Safety, responsible for enforcement.

Mt. Pleasant: W. K. Willman, City Manager.
CM—Entirely responsible.
C P—None aside from cooperation.

Petoskey: Peter T. Mitchell, City Manager (and City Engineer).
CM—Efficient administration of city.
C P—Police Department alone has responsibility for traffic facilitation and control.

Pleasant Ridge: Ashton J. Berst, City Manager (and Chief of Police).
CM—In charge of Police Department and traffic direction.

Royal Oak: R. J. Whitney, City Manager.
CM—In control of traffic regulation.
C P—To enforce orders of Manager and city ordinances.

Sault Ste. Marie: Henry A. Sherman.
CM—Has supervision over the Police Department.
C P—The Chief of Police has full responsibility for facilitation and control of street traffic under the direction and supervision of the City Manager.

MINNESOTA

Alexandria: H. P. Campbell, City Manager (and City Engineer).
CM—Recommends to City Council and directs installation of signals, traffic rules, time of parking, etc.
C P—Enforce traffic regulations.

Morris: F. E. Ware, City Manager.
C P—Entirely in his charge, subject to orders of the Mayor.

Robbinsdale: Clinton F. Wilson, City Manager.
C P—Has control.
Special: The Street Commissioner supports the Chief of Police in traffic regulation.

White Bear Lake: Ambrose Fuller, City Manager.
CM—Responsible for appointments and rules not having the dignity of ordinances.
C P—Responsible for general policing and for the rest of the staff in so far as work is concerned. No appointing or rule-making power.

NEBRASKA

Alliance: L. A. Goines, City Manager.
CM—Administrative, acting through Police Department.
C P—Full responsibility for enforcement of traffic regulations.
Special: Superintendent of Streets maintains street signs, traffic marking, painting, etc.

NEW JERSEY

Summit: John P. Broome, City Manager.
CP—Direct responsibility for all ordinances and regulations. Reports to Mayor.
Special: Fire and Police Committee also have responsibility for traffic regulation.

NEW YORK

Auburn: John P. Jaeckel, City Manager.
CM—Prescribes one-way streets and prohibited districts; directs the placing of parking lines on Genesee Street and designates parking places for taxicabs and express vehicles; provides for placing of notices of traffic ordinance.
C P—Has full charge.

Sherrill: C. B. Salisbury, City Manager.
CM—Plan and scope.
C P—Active cooperation.

Watertown: J. Walter Ackerman, City Manager.
CM—Drafts ordinances for adoption by Council after conference with Chief of Police.
C E—Designing street layout for proper distribution of traffic.
C P—Has full charge.

NORTH CAROLINA

Durham: R. W. Rigsby, City Manager.
CM—Holds Police Department responsible for operating traffic facilities.
C E—None except following plans for street widening, etc.
C P—Held responsible for enforcing all ordinances, patrolling streets by means of traffic squad and operating traffic control devices.

Gastonia: D. L. Struthers, City Manager.
CM—Direct supervision of Police Department.
C P—Sees that instructions from City Manager are carried out.

Greensboro: P. C. Painter, City Manager.
CM—In general control.
C E—None, other than to furnish Police Department with traffic control layouts.
C P—Is responsible for control of street traffic, under the City Manager.

High Point: P. P. Pilcher, City Manager (and City Engineer).
CM—Administrative head of city, in charge of all departments.
C P—Directs the work of Police Department under the direction of the City Manager.

Thomasville: R. M. Cooksey, City Manager.
CM—Advises City Council as to needed regulations, etc.
C P—Carries out ordinances and regulations.

OHIO

Cincinnati: C. O. Sherrill, City Manager.
CM—Has entire responsibility for traffic control.
C P—Executes orders as directed by the City Manager.

Cleveland: William R. Hopkins, City Manager.
Special: Commissioner of Traffic has responsibility.

Dayton: P. Q. Eichelberger, City Manager.
CM—Approves all ordinances relating to traffic control before they are submitted to the City Commission, which is the legislative body.
C P—Has no responsibility so far as the control or regulation of traffic is concerned.
Special: The Director of Public Safety has general control of the Divisions of Police and Fire and general supervision and control of traffic in every detail and the compilation of all changes in the traffic code, etc. The suggested changes are then submitted to the City Manager and through him to the City Commission for study and approval.

East Cleveland: Charles A. Carran, City Manager.
CM—General responsibility, but delegates to the Chief of Police.
CE—Advisor to Manager and Police Chief.
C P—Direct responsibility.

Lima: I. C. Brower, City Manager.
CM—Responsible for facilitation and control. Coordinates supervision, maintenance and recommendations as between the Electrical Department and the Police Department.
C P—Recommends timing of the lights and any changes in location; reports on failures in operation, lamp outages, etc.; places lights in service and turns them off at designated hours in morning and at night and places all lights in "Red" by switches located in Police Headquarters.
Special: Lights are installed and are maintained by the City Electrical Department under the supervision of the City Electrical Inspector.

Oberlin: D. F. Herrick, City Manager (and City Engineer).
CM—Advises police on traffic regulation.
C P—Control is left to police with advice from Manager.

Sandusky: C. Webb Sadler, City Manager.
CM—Is administrative head of city government and acting Safety and Service Director and responsible for street traffic control.
C E—None except in an advisory capacity.
C P—Only in an advisory capacity.

Xenia: S. O. Hale, City Manager.
CM—Appointment of traffic policemen and procuring necessary equipment.
C P—Instructing policemen, directing their activities and keeping them on the job.

OKLAHOMA

Ardmore: Kirk Dyer, City Manager.
C P—Traffic control left wholly to the Police Department, under ordinances and other regulations.

Chandler: R. C. Roope, City Manager.
CM—Has entire control of all administrative functions of City.
C E—Under Manager's direction.
C P—Enforces all traffic and other ordinances. Directly responsible to City Manager.

Coalgate: Robert M. Lacy, City Manager.
CM—Placing of signs in business part of city; framing ordinances to include streets as added; Police Judge in Municipal Court.
C P—Enforcing ordinances dealing with speeding, stop and slow signs, careless driving and parking.

El Reno: E. W. Fassett, City Manager (and City Engineer).
CM—Full responsibility.
C P—Enforcement of traffic laws; issues special traffic rules.

Muskogee: A. F. McGarr, City Manager.
CM—Sees that traffic ordinances are enforced.
C P—Apprehends and prosecutes violators of traffic laws.

Nowata: W. W. Sanders, City Manager.
CM—In conjunction with Police Department.
C P—Cooperates with City Manager.

Sapulpa: F. E. Lawrence, City Manager.
CM—Responsible through Police Department, over which general supervision is given.
C P—In charge of all traffic regulations, street marking, etc.

OREGON

Astoria: O. A. Kratz, City Manager.
CM—Administrative.
C P—Enforcement and direction of traffic.

Oregon City: J. L. Franzen, City Manager.
CM—Is responsible for all departments and their efficiency.
C E—Is responsible for the condition of streets and traffic direction equipment.
C P—Is responsible for direction of traffic and the enforcement of laws governing traffic.

PENNSYLVANIA

Carlisle: George P. Searight, City Manager (and City Engineer).
CM—The introducing of all legislation concerning handling of traffic, purchasing and installing all traffic control devices and general supervision over all traffic signs and lines.
C P—Enforcement of all traffic laws under supervision of the Burgess.

Conshohocken: H. D. Herbert, City Manager (and City Engineer).
CM—Planning and placing the various street traffic markings, purchasing and superintending the installation of devices.
C P—Enforcement of traffic regulations.

Coraopolis: Ernest E. Lathrop, City Manager.
CM—Purchase and maintenance of traffic signals. Manager does not have supervision of police.
C P—Responsible as far as enforcing observance of traffic lights.
Special: Chairman of Public Safety Committee is member of Borough Council.

Dormont: E. O. Garrett, City Manager.
CM—Design and marking (installation and maintenance) of traffic regulation signs.
C P—Enforcement of regulation and obedience to directions established by Manager.

Edgeworth: H. P. Burkholder, City Manager (and City Engineer).
CM—The City Manager is given, by ordinance, the responsibility of all municipal activities except those especially delegated by statute to other municipal officers.
C P—Supervision of all police work, reporting to the City Manager.

Milton: Chester A. Eckbert, City Manager.
CM—For maintenance and installation of all traffic control devices.
C P—To make arrests where traffic regulations are violated according to ordinance passed and adopted by Milton Borough Council covering the movements of traffic where traffic control devices are installed.
Special: Chief Burgess also has responsibility for traffic regulation.

Towanda: William T. Howie, City Manager.
C P—Complete control, under Burgess' direction.

SOUTH CAROLINA

Florence: D. Lewis Husband, City Manager.
C P—Police Department has entire control.

Sumter: S. O'Quinn, City Manager.
CM—In a general way is responsible for all the affairs of the city, including street traffic.
C E—No full-time engineer, the City Manager looking after a part of such duties.
C P—The Chief of Police is directly responsible for the control of street traffic under the general supervision of the City Manager.

TENNESSEE

Elizabethtown: E. R. Lingerfelt, City Manager.
CM—Exercises direct supervision over Police Department through Chief of Police.
C P—Keeps all traffic signs in order and enforces traffic ordinances and regulations.

Kingsport: F. L. Cloud, City Manager.
CM—Sees that Police Department keeps traffic safe.
C P—Controls and keeps traffic moving.

Knoxville: Charlton Karns, City Manager.
Special: The entire responsibility for facilitation and control of street traffic rests with the Director of Public Safety.

TEXAS

Amarillo: Jeff D. Bartlett, City Manager.
CM—Responsible for the efficient administration of the Traffic Department.
C E—Advisory when called on.
C P—Under City Manager directly responsible for Traffic Department.
Special: Captain of Police in charge of Traffic Department under Chief of Police.

Austin: Adam R. Johnson, City Manager.
CM—Responsible to the Council for all administrative matters pertaining to the city government.
C P—Responsible to City Manager for enforcement of all traffic regulations.
Special: Superintendent Electrical Department is responsible to City Manager for operation of electric traffic controls.

Brownsville: A. E. Mundy, City Manager.
C P—Has general control and authority over all street traffic and operation of traffic signals.
Special: Street Commissioner also has responsibility.

Eastland: J. H. Cheatham, City Manager.
CM—Is responsible to the City Commission.
C P—Responsible to the City Manager.

Lufkin: V. R. Smitham, City Manager (and City Engineer).
CM—Responsible to City Commission for enforcement of all traffic regulations.
C P—Responsible to City Manager for enforcement of all traffic regulations.

Sherman: O. J. S. Ellingson, City Manager.
CM—All under City Manager.
C E—Engineering only.
C P—Enforces the law.

Taylor: A. V. Hyde, City Manager.
CM—Control over Police Department.
C P—Handles all traffic.

Temple: G. E. Byars, City Manager.
CM—Plans and ordinances.
C E—Street markings.
C P—Enforcement.

Terrell: L. A. Markham, City Manager.
CM—Sees that streets are not obstructed; that streets are kept in good repair; works out method of traffic regulation and control.
C P—Enforces traffic regulations planned by Manager and adopted by City Commission; removes obstructions on order of Manager; and attends to emergency matters in connection with traffic on the streets.

Tyler: Lee H. Powell, City Manager.
CM—Sees that the Chief of Police controls the traffic situation and recommends the necessary ordinances to City Commission.
C P—The City Manager gives the Chief of Police full control of the traffic situation after the City Manager and City Commission approve the policy.

Waco: E. E. McAdams, City Manager.
CM—General supervision.
C E—Surveys and recommendations.
C P—Enforcement.

VERMONT

Windsor: Alfred L. Farmer, City Manager.
CM—Has full charge and oversight of all municipal affairs.
C P—Responsible for the handling of traffic.
Special: Three Trustees act as council with the Manager.

VIRGINIA

Bristol: John D. Keeler, Jr., City Manager.
CM—In general charge and responsible to council; designates parking limits, etc.
C E—None except advisory.
C P—Enforces all traffic regulations through traffic officers.

Charlottesville: H. A. Yancey, City Manager.
C P—Has responsibility.

Galax: I. G. Vass, City Manager.
CM—Provides the proper material for marking streets, proper street signs, proper maintenance of streets.
C P—Sees that traffic laws are enforced.

Lynchburg: R. W. B. Hart, City Manager.
CM—Head of the City Administration.
C E—Technical and advisory.
C P—Direct responsibility for administration of traffic control in the city.
Special: Firemen assist where stations are located near schools, at certain hours of congestion.

Newport News: J. C. Biggins, City Manager.
CM—Is also Director of Public Safety and is in direct charge of traffic control.
C P—Is directly responsible to City Manager; directs activities of the police force in control of traffic as in all other police matters.

Norfolk: I. Walke Truxtun, City Manager.
CM—Has general responsibility.
C E—Is Director of Public Works; has no responsibility for traffic control except as to arrangement, construction, maintenance and repair of streets.
C P—Subject to control of Director of Public Safety.
Special: Director of Public Safety is directly charged with, and responsible for, control of street traffic.

Petersburg: W. F. Drewry, City Manager.
Special: Traffic is under the control of the Director of Safety.

Portsmouth: Frank C. Hanrahan, City Manager.
CM—Has direct responsibility.
C E—Cooperates with Chief of Police.
C P—Responsibility delegated to him by City Manager.

Roanoke: W. P. Hunter, City Manager.
CM—Sees that the rules and regulations passed by the City Council are enforced.
C P—Carries out the instructions of the City Manager.

Salem: W. Lawrence, City Manager.
CM—General supervision over Police Department.
C P—Sees that traffic ordinance is enforced.

Staunton: W. F. Day, City Manager (and City Engineer).
CM—Controls Engineering and Police Departments.
C P—Under City Manager.

WEST VIRGINIA

Bluefield: Boyd A. Bennett, City Manager.
CM—Administrative head of the government responsible for the efficient administration of all departments.
C E—Only the responsibility given him by the Manager.
C P—Enforcement of all laws, ordinances, traffic regulations, etc.

Clarksburg: G. L. Coyle, City Manager.
CM—City Manager appoints Chief of Police and Police Court Judge with consent of Council.
C P—Traffic regulations directly under Chief of Police and Police Department.
Special: The Police Department is under the supervision and control of the Police Court Judge.

Morgantown: W. E. Brooks, City Manager.
CM—Is responsible to City Council and carries out any orders of council.
C E—None, except as may be directed by Manager
C P—Is in direct control and is responsible to City Manager.

WISCONSIN

Kenosha: C. M. Osborn, City Manager.
CM—100 per cent responsible. Delegates the responsibility of looking after the details to the Chief of Police principally, and Director of Public Works cooperates.
C P—The responsibility for traffic control is chiefly placed on the Police Department in cooperation with the Director of Public Works.

Salaries of Officials in the 40 Largest Wisconsin Cities

UNDER the General Charter Law, which now applies to all of the cities of the state except Milwaukee, in Wisconsin, cities are required at the first regular meeting in February to fix the salaries of all officers to be elected or appointed during the ensuing year, and these salaries when fixed cannot be increased or diminished during the term of office for which the officials are selected.

The figures in the following table have been compiled from a report issued in July, 1927, by the Municipal Information Bureau of the University of Wisconsin. The complete report gives similar statistics for all of the 144 cities of the state. Those here listed are for the forty largest cities in the state, according to the 1920 census, the census figures being given in parentheses in each case under the name of the city.

In a number of cities the practice is followed of combining two offices by having the same person perform the duties of both. Thus, the city clerk frequently acts as secretary of the water and light commission; the city treasurer as treasurer of the water department for the collection of water rates; and the mayor or city clerk as comptroller. In a number of cities the water-works superintendent is also superintendent of the electric plant. In these cases the salary is divided between the two positions, or additional compensation is added for one or the other office. Cases where this practice is followed are indicated by footnotes. In cases where no salary was reported or where no report was made for an office, the space has been left blank.

	Antigo (8,451)	Appleton (19,561)	Ashland (11,334)	Baraboo (5,538)	Beaver Dam (7,992)	Beloit (21,284)	Chippewa Falls (9,130)	Cudahy (6,725)	De Pere (5,165)	Eau Claire (20,880)
Mayor	$1,800	$1,800	$900	(1)$5	$1,000	$1,000	$1,500	$1,800	.....	$3,500
Councilman	1,500	(1)(15)3	(1)3	(1)3	100	(1)(15)3	1,200	(26)300	.....	3,000
City Clerk	(11)	2,500	(27)2,300	2,640	2,400	2,700	1,800	2,220	$1,500	(22)3,200
City Treasurer	(11)	2,500	2,000	1,500	1,000	1,200	1,000	1,380	600	2,000
City Attorney	900	2,000	1,200	1,020	900	1,800	1,200	1,200	660	1,500
City Engineer	2,600	3,400	(16)7	1,200	3,000	3,600	(13)2,350	1,200	(18)10	(24)3,920
Street Superintendent	1,050	2,400	1,620	1,500	1,500	1,940	(9)	1,800	1,500	2,550
Health Officer	600	1,350	600	540	300	3,600	600	600	200	1,500
Water-works Superintendent	2,220	.....	.....	1,800	(9)	.....	1,700	2,340	1,500	2,700
Police Chief	1,680	2,340	2,100	1,658	1,800	2,520	1,500	2,400	1,380	2,700
Fire Chief	1,680	2,340	1,680	240	100	2,520	1,500	480	125	2,700
Assessor	(18)5	2,500	1,800	500	900	2,400	1,000	525	600	1,800
Sealer of Weights and Measures	480	1,500	1,500	480	300	780	(19)800	(20)	.....	600

	Fond du Lac (23,427)	Green Bay (31,017)	Janesville (18,293)	Kaukauna (5,951)	Kenosha (40,472)	La Crosse (30,363)	Madison (38,378)	Manitowoc (17,563)	Marinette (13,610)	Marshfield (7,394)
Mayor	$3,500	$3,000	(4)$7,200	$600	(4)$9,500	$2,400	$2,000	$800	$1,200	$300
Councilman	3,000	420	.....	(2)120	.....	200	300	300	150	(1)4
City Clerk	2,400	2,500	(12)3,000	2,100	(5)4,300	2,400	2,800	3,200	1,800	1,800
City Treasurer	2,400	(22)2,400	(12)	720	(5)	2,400	3,000	2,300	1,500	1,600
City Attorney	2,100	2,150	2,000	720	4,000	2,400	3,300	2,000	1,200	600
City Engineer	2,820	3,250	3,000	(16)10	4,200	3,300	5,400	(9)4,200	1,680	3,000
Street Superintendent	(11)	2,400	3,000	1,500 ea.	(6)	(7)	3,800	(9)	1,680	1,560
Health Officer	1,200	3,150	2,000	500	3,800	2,100	5,850	700	600	600
Water-works Superintendent	.....	3,300	3,000	(2)6,600	(9)4,800	2,400	5,600	(2)	.....	(2)3,120
Police Chief	2,400	2,550	2,400	1,800	3,600	2,300	3,300	2,380	1,920	1,680
Fire Chief	2,400	2,550	2,400	(12)200	3,600	2,300	3,300	2,380	2,040	.....
Assessor	2,000	2,300	2,100	600	3,000	1,620	3,000	3,000	1,400	(16)5
Sealer of Weights and Measures	720	1,800	(21)	480	2,000	1,500	2,700	1,080	800	600

	Menasha (7,214)	Menominie (5,104)	Merrill (8,068)	Milwaukee (457,147)	Neenah (7,171)	Oshkosh (33,162)	Portage (5,582)	Racine (58,593)	Rhinelander (6,854)	Sheboygan (30,955)
Mayor	$400	$1,200	$500	$6,800	200	$4,000	$600	$1,500	(4)$4,000	$900
Councilman	200	1,000	(1)2	1,860	150	3,500	(14)100	600	100	450
City Clerk	2,100	(11)800	1,800	4,200	2,700	2,700	1,400	2,600	1,800	1,800
City Treasurer	2,100	(11)	1,200	5,300	1,200	2,120	625	3,000	1,500	1,800
City Attorney	800	(22)	1,200	6,300	720	2,520	750	3,000	.....	1,800
City Engineer	2,100	.....	1,500	6,500	(16)15	3,120	300	3,600	(4)	2,400
Street Superintendent	1,800	(11)	1,500	4,200ea.	1,800	2,520	1,500	3,000	1,560	2,760
Health Officer	400	300	500	7,500	400	3,120	360	4,800	200	2,400
Water-works Superintendent	(2)3,000	1,200	.....	5,000	1,920	(23)	2,500	.....	.....	3,600
Police Chief	1,800	1,080	1,500	6,000	1,800	2,520	1,500	3,600	1,860	2,820
Fire Chief	1,620	600	1,500	6,000	1,800	2,520	370	3,300	1,620	2,820
Assessor	(16)5	600	1,000	5,000	(16)5	1,920	400	1,800	800	1,350
Sealer of Weights and Measures	240	300	420	(2)3,060	300	1,920	480	2,400	1,020	2,100

	South Milwaukee (7,598)	Stevens Point (11,370)	Superior (39,624)	Two Rivers (7,305)	Watertown (9,299)	Waukesha (12,558)	Waumu (18,661)	Wauwatosa (5,818)	West Allis (13,765)	Wisconsin Rapids (7,243)
Mayor	$900	$1,200	$5,000	(4)$5,600	$300	$500	$2,400	$1,000	$3,600	$600
Councilman	420	(1)10	4,500	.....	120	200	200	500	900	(1)4
City Clerk	2,100	1,800	2,216	2,280	2,460	(26)1,500	1,800	3,600	3,000	1,200
City Treasurer	1,920	1,800	2,900	2,220	1,200	1,200	1,800	2,000	2,500	600
City Attorney	1,500	900	3,600	1,200	1,200	1,500	1,000	2,000	4,000	300
City Engineer	Contract	3,000	3,900	3,660	2,400	3,000	2,800	3,000	3,720	1,200
Street Superintendent	2,220	1,800	.....	2,440	1,400	2,100	1,800	2,100	(8)5,000	1,800
Health Officer	900	900	2,400	350	500	480	2,100	1,500	4,000	360
Water-works Superintendent	3,300	2,700	.....	(2)2,940	2,400	2,500	2,100	2,600	2,720	(2)3,300
Police Chief	2,700	1,800	3,180	2,000	2,000	2,160	1,920	2,307	3,000	2,100
Fire Chief	480	1,080	3,180	1,900	300	2,160	2,100	350	3,000	1,800
Assessor	2,100	600	3,000	1,800	1,400	1,000	1,800	2,800	2,700	1,000
Sealer of Weights and Measures	(20)	600	1,656	.....	680	240	1,300	600	1 860	600

(1) Per meeting. (2) Plus $5.00 for one extra meeting. (3)Also Electric Supt. (4) City Manager. (5) Office of Clerk, Treasurer and Comptroller combined. (6) Director of Public Works. (7) Board of Public Works. (8) First year, $3,060; second year, $3,240; third year, $3,360; fourth year, $3,540. (9) City Engineer. (10) Office of Clerk and Treasurer combined. (11) Also Councilman. (12) Plus $150. for inspections. (13) Also Street Supt. (14) Newly elected members receive $200. (15) Plus 50 cents per hour committee work. (16) Per day. (17) Includes salary as Secretary, Board of Education. (18) Plus $1.00 per hour committee work. (19) Also Milk Inspector. (20) Included with Chief of Police. (21) Also Waterworks Supt. (22) Also Comptroller. (23) Mayor. (24) $700 charged to waterworks. (25) Plus $5.00 for each special and adjourned meeting. (26) Plus $300 for tax roll assistance.

Struggling with the Traffic Problem

Helpful Hints in Pictures and Paragraphs

CHALKING AUTOMOBILE TIRES FOR OVER-TIME PARKING IN DENVER

By inserting a piece of crayon in the ferrule of a section of fishing-rod and holding it firm by thumb-screw and clamp, the officer can check up on parked cars without dismounting

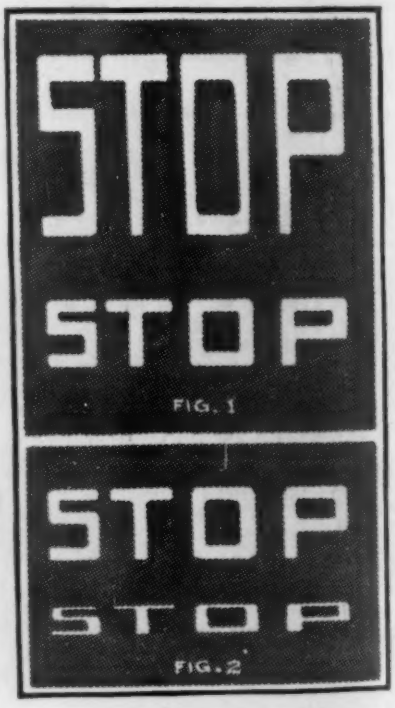
CHICAGO ILLUMINATES VIADUCT SUPPORT COLUMNS IN ROADWAYS

Where such columns constitute an obstruction to traffic, the painting and lighting shown above are employed to minimize hazard

AT RIGHT—PERSPECTIVE EMPLOYED IN PAVEMENT SAFETY SIGN, TO AID MOTORISTS' VISION

AT LEFT—CLUSTER OF LIGHTS AND BELLS FOR POLICE, TRAFFIC AND FIRE DEPARTMENTS IN BROOKLINE, MASS.

See next page for comment on these photographs



Cluster of Lights Aids Police, Traffic and Fire Department

AT Brookline, Mass., the upper part of several fire-alarm box pedestals at important street intersections are utilized in a unique manner. At the very top of the pedestal there is a cluster of three lights. The one in the center has a red lens which is used to mark the location of the fire-alarm box at night. The light at the right has a green lens and is used for flashing code signals to the police officers who are on their beats. The light at the left also has a red lens, but is of the flasher type and is used for notifying traffic of the approach of the fire department.

Below this cluster of lights are a Klaxon horn and vibrating bells. The horn is used as an audible recall unit for summoning policemen by means of coded signals. The vibrating bells are for traffic use and furnish audible notification of the approaching fire apparatus. This installation was made by the Gamewell Company and is part of the new system recently installed at Brookline.

SAFEGUARDING BOSTON'S CHILDREN

Forceful, if not as elegant as cultured Boston might desire, is the warning sign recently prepared by the Boston Automobile Club, and here reproduced. Some 5,000 of these signs have been printed by the Club for posting on the streets of Boston, mainly in the congested residential districts

Optical Illusion Aids Safety

MARKINGS on the pavements indicating instructions to the motorist are common, but the size and form of the letters present problems not always solved satisfactorily. It is suggested that the laws of perspective might be employed in designing signs so that they would not present a distorted appearance, but would remain clearly visible even though the motorist's eye must be very nearly upon the same plane. For example, the word "STOP" painted flush on the pavement in large and elongated letters, as in Figure 1, should appear at a distance of 150 or 200 feet very nearly in normal proportions, as in the second line of Figure 1. The second line of Figure 2 illustrates the appearance of squarely proportioned letters at a similar distance. (See page 516.)

—*National Safety News.*

Enforcing the All-Night Parking Law in Chicago

THE *Police Department Bulletin* of the city of Chicago, for July 14, 1927, contains the following order from Superintendent of Police Michael Hughes:

"To COMMANDING OFFICERS: My attention is called to the fact that members of the Department are not strictly complying with that part of instructions, quoted below, as contained in Circular Order No. 27, dated May 21, 1927, with reference to all-night parkers of automobiles:

"In all cases where an automobile is parked in violation of any of the above three sections, the upper part of this yellow tag will be attached, with proper violation checked, to the automobile for the notice of the owner, *and is to serve as a warning for the first offense in this respect;* the perforated stub will be retained by the officer finding such violation and brought by him to his station, where the information thereon will be recorded and kept for reference in the event the automobile owner is a violator for the second time."

"Should an auto owner be a second offender, then the Department will cause the removal of his automobile from the street and action taken to effect his arrest.

"You will lay particular stress on that part of instructions underscored above when reading to the members of your respective commands, making it clear to them that a tag is to be attached to automobile and left there merely as warning to him for his first offense. In no case shall the automobile of a first offender be removed from the street. This action should only be taken when an offender has failed to heed the warning as given on tag, and repeats the offense of parking his automobile for the second time."

REMOVABLE SAFETY STATION INSTALLED IN SAN FRANCISCO

For the purpose of increasing pedestrian safety in San Francisco a safety station that is easily and quickly removable has been installed on Market Street. The station is a set of steel posts placed in steel sockets in the pavement

Do Small Playgrounds in Cities Increase the Value of Adjoining Property?

THIS is a question that cannot be answered by an authoritative Yes or No. That land values are increased by neighboring large parks, is true, and there are estimates and opinions regarding the effect of small recreation spaces in cities on the value of the surrounding land—but not always distinguishing between playgrounds and parks. A bare and dusty little playground full of noisy children may well make the neighbors want to move away; and it seems fair to conclude that a well-planted, well-supervised playground will prove a boon to a residential neighborhood. As to the playground in a business and industrial neighborhood—one sees the probability of indifference on the part of storekeepers and manufacturers as to that bit of recreational space; and the land will naturally increase in value because of the commercial demand for it.

But these are only preliminary thoughts. In *The Playground* for September Charles J. Storey, of the Department of Recreation of the Russell Sage Foundation, states and analyzes the results of a study of nine playgrounds—seven in the Borough of Manhattan, New York City, and two in Brooklyn. The values of land around these playgrounds two or more years before the acquisition of the playgrounds have been compared with the values in 1926, using land-value maps and tax reports. Three of the playgrounds are in districts that are partly business or industrial; that is, they are zoned with unrestricted districts around them. Mr. Storey's conclusions are quoted below in full; his discussion of the conditions will well repay readers of the complete article.

Conclusions

(a) There have been no decreases in land values on the blocks bordering the playgrounds after the acquisition of the playgrounds, but rather a steady increase has taken place.

(b) Small plots used as playgrounds when surrounded by business and industry appear to have little effect one way or the other on surrounding values.

(c) Large plots well cared for, such as Betsy Head Playground, when in a wholly residential district increase the values of the bordering property in somewhat the same manner as parks do.

(d) Where playgrounds are now in the midst of mixed residential, business and industrial blocks, as Chelsea and St. Gabriel's, there is not the same rate of increase in land value on bordering streets as on streets adjacent. This is probably because the increased commercial use of the land tends to overshadow any benefits derived from the playground by the residents.

(e) Where the neighborhood is wholly residential in character, the average increase of land values around the playground has been far greater than in other districts where business or industry are present.

(f) When business and industry extend into blocks bordering on or adjacent to a playground, the benefits of the playground to the neighborhood as reflected in the land values are very much decreased.

(g) In order to obtain the full and continued benefits from playgrounds, as from parks, all sides of them should be zoned for residential purposes only.

TABLE I

PER CENT OF INCREASE IN LAND VALUES—1904 TO 1926

Playground	Area (acres)	Increase Bordering on Playground	Increase Adjacent to Playground	Increase in Section	Increase in Borough
		%	%	%	%
Chelsea	3.10	31	53	38	27
W. 59th St.	0.58	68	75	32	27
St. Gabriel's	2.92	27	33	38	27
Yorkville	0.85	51	42	9	27
St. Catherine	1.38	47	57	55	27
John Jay	3.90	103	103	45	27
Carmansville	0.14	92	94	51	27
a Betsy Head	10.50	175	118	89	55
b Gravesend	6.92	127	125	91	57

a Increase, 1911 to 1926.
b Increase, 1915 to 1926.

TABLE II

COMPARISON OF ZONING AROUND AND PER CENT OF INCREASE IN BOTH BORDERING AND ADJACENT LAND VALUES

	No. of Sides Zoned for: Residential	Business	Unrestricted	Per Cent of Increase 1904 to 1926
Chelsea	..	3	1	45
W. 59th St.	..	..	4	74
St. Gabriel's	..	3	1	32
Yorkville	..	4	..	44
St. Catherine	..	4	..	54
John Jay	2	1	..	100
Carmansville	3	1	..	93
Betsey Hed	2	2	..	*a*108
Gravesend	3	1	..	*b*94

a Increase, 1911 to 1926.
b Increase, 1915 to 1926.

A "Careful and Prudent Speed" the New Limit on Michigan Highways

UNDER the terms of the new state traffic code, which went into effect on September 5, pleasure cars on Michigan highways where definite speed limits are not set by city or town ordinances, may be driven without concern for any miles per hour restriction. The pertinent sections of the new code are:

Section 4.—Reckless Driving

Any person who drives any vehicle upon the highway carelessly and heedlessly in willful or wanton disregard of the rights or safety of others, or without due caution and circumspection and at a speed or in a manner so as to endanger or be likely to endanger any person or property, shall be guilty of reckless driving and upon conviction shall be punished as provided in Section 55 of this Act.

Section 5.—Restrictions as to Speed

(a) Any person driving a vehicle on a highway shall drive the same at a careful and prudent speed not greater than nor less than is reasonable and proper, having due regard to the traffic, surface and width of the highway and of any other conditions then existing, and no person shall drive any vehicle upon a highway at a speed greater than will permit him to bring it to a stop within the assured clear distance ahead: provided, however, that in the event of damages occurring to person or property

on account of a collision of vehicles or of vehicles with other objects, in which both parties were violating any laws of the state pertaining to the operation of vehicles, then the question of who shall be held for damages shall be a question of fact.

Section 55.—Penalty for Reckless Driving

Every person convicted of reckless driving under Section four of this Act shall be punished by imprisonment in the county or municipal jail for a period of not less than five days nor more than ninety days, or by fine of not less than $25 nor more than $100, or by both such fine and imprisonment, and on a second or subsequent offense shall be punished by imprisonment for not less than ten days nor more than six months or by a fine of not less than $50 nor more than $1,000, or by both such fine and imprisonment.

In an explanatory statement for the state police and motorists, as published in the *Detroit News*, Commissioner Oscar G. Olander, of the Department of Safety, said:

"In thinking that there will be no limit to the lawful speed of an automobile on the highway except the speed of the car itself, many people are far from the truth.

"On a clear road with no traffic, no curves or hills and no traffic approaching from side roads, a man may drive his car as fast as he likes, but if there is other traffic ahead of him he must drive at a speed that will enable him to stop in rear of other cars going in the same direction.

"If there are children playing or walking along the road his clear distance is assured only up to those children. On hills or around curves he must be able to stop within the limit of his vision. If traffic approaches from a side road, he can not be assured that they will not drive in front of him, so must drive his car well within control. When rain, ice and snow make the roads slippery, he must drive slower."

The Commissioner specifically pointed to a clause in the law which prohibits driving at a speed "less than is reasonable and proper" upon a crowded highway.

The speed through cities and towns remains the same, as does the speed permitted for trucks and busses. Trucks whose gross weight exceeds 18,000 pounds will be held to 15 miles an hour; those of 8,000 pounds or whose length over-all exceeds 40 feet will be held to 20 miles per hour, and those whose gross weight exceeds 5,000 pounds will be held to 25 miles an hour.

Trucks whose length over-all exceeds 40 feet must not drive within 1,000 feet of another such truck, and no truck is allowed to follow another within 100 feet.

New Street-Lighting Standards in Florida Cities

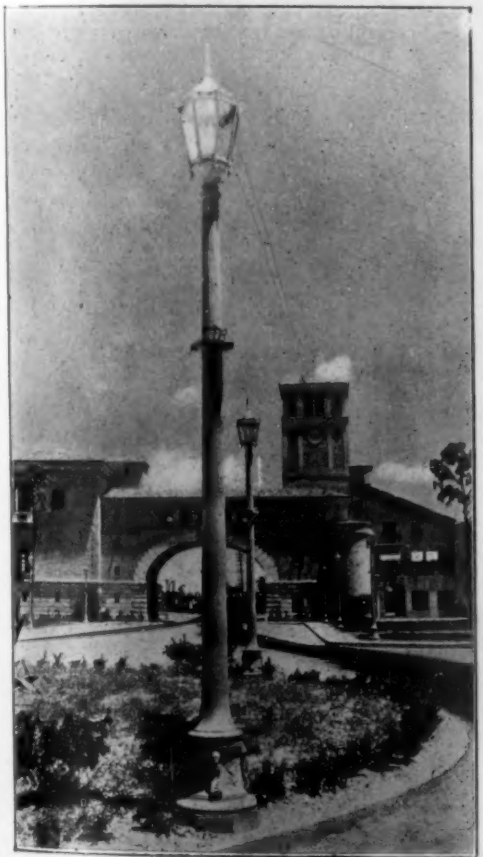


Photo by Edmund Friedman, City Engineer, Coral Gables

Photo by Hamilton Wright, New York.

Left, type being installed by Florida Power & Light Co. on principal residential streets in Coral Gables; cast-iron King posts, with flag bracket, and 400-cp. General Electric Novalux units. Right, one of the large Westinghouse-Holophane installation on Biscayne Boulevard, Miami, the design being the result of a prize competition (see The American City for June, page 873)

Factors Which Should Determine the Size, Layout and Control of Airports

To the Editor of THE AMERICAN CITY:

I have read with considerable interest the article by George B. Ford on "Location, Size, and Layout of Airports." On the whole I agree with the recommendations made, though there are a few points on which my own studies and experience lead to a different conclusion.

As regards the shape of the field, a square plot is always preferable, and the L or T shape should be considered as not quite so generally suitable as the square. This is because the square plot greatly facilitates landing immediately after taking off, if the engine chooses this critical time to get balky. Of course, it is preferable to land straight ahead, but conditions are usually such that a turn is necessary, and the square field may make it possible to re-land without having to turn *completely* around—hence cutting down the altitude lost in making the turn under these conditions.

I see no important reason for considering the wind direction in locating buildings, as the most desirable position for these is generally fixed by the necessity of keeping approaches and the ends of the runways clear, and by the advisability of keeping them convenient of access from the roadway serving the airport.

Mr. Ford's suggestion of a concrete-surfaced area in the space between two hangars, and with the doors opening on to this area instead of towards the field, is an excellent one. This has been done in some cases and works out very well. However, the large doors of hangars are so expensive that the advisability of placing a door in each end of a hangar is open to some question. It might be better practice in many cases to divide the same area into two separate hangars instead of using one with two doors.

In the matter of size of field, I note that towards the close of the article 160 acres is recommended. I have been in the habit of recommending as minimum (for altitudes near sea-level) square fields with 2,000-foot sides. This gives an area of about 92 acres and provides an excellent field if the surroundings are good. In most cases it will be fully satisfactory, but it is always well to consider that there never is any objection, except cost, to having greater area. The question of fields for relatively high altitudes is another matter altogether, and their area depends upon many elements, including the characteristics of the airplanes to be flown therefrom.

I must express my most hearty accord with Mr. Ford's closing comment, in which he points out the necessity of planning an airport from the very start, even if the development is to be put off until a future date. The cost of such planning is inconsequential, compared with the cost of the field and its development, and it will usually save far more than its cost within a few years.

In conclusion, I want to urge that municipalities give fullest consideration to this matter of airports. Already, far-sighted promoters are obtaining control of airport sites in cases where only one or two suitable locations are available near cities. This angle of development is not necessarily one which will benefit the city. Unless the promoter happens to be a very public-spirited individual (as *some* have been), the city may find itself squeezed, just as other cities found themselves squeezed by railroads with the foresight to obtain control of the only right-of-way into cities years ago.

ARCHIBALD BLACK,
Air Transport Engineer, Garden City, N. Y.

[6] See the September number, pages 301-3.

The Airplane in National Planning Studies

To the Editor of THE AMERICAN CITY:

America's aviation students, operators, investors, and public are thinking of speed, comfort, and safety, and of profits from the carrying of mail, light articles of commerce and emergency, and stunt flying passengers, and of successfully establishing the industry without the governmental subsidies of the European countries.

Regional and city planners should give serious study to the effect that aviation when firmly established will have on the big movements of the people. In the past two generations and since the advent of the automobile, the people have been moving rapidly from the hills to the valleys along the easiest and most direct travel ways. This movement may be emphasized by the lighted airways across the continent.

On the other hand, may not the airplane lead people back from the hot crowded valleys to the cool hills? Should we not be locating the best hilltop landings that will serve a wide radius?

Study should also be given to the recreational values of the airplane and to the importance of acquiring big landing fields near the center of the great recreational regions throughout America, represented by the Allegheny, Catskill and Green Mountains. To such centers may come commuters in many planes quickly from the big cities to take their cars, that will be cared for during the day at these centers, to which they will go from their homes.

Thus may the suburban districts of cities be given a much wider radius, as the automobile has greatly extended the radius of travel in the horse-drawn vehicle days.

WARREN H. MANNING.
Cambridge, Mass.

An Annual Prize Essay Competition on "American Institutions"

THE Trustees of the Michigan Law Review Fund offer a prize of $500 for the best essay, and a prize of $250 for the second-best essay, on "American Institutions," national, state, and local. The essays may be historical, sociological, legal, or otherwise.

The essays must be submitted on or before October 1, 1928, and by the same day in successive years. For further information address Prof. Grover C. Grismore, Secretary, Board of Governors of the Lawyers Club, University of Michigan, Ann Arbor, Mich.

High Efficiency Developed in Detroit Water-Works Pumps

Motor-driven Centrifugal Pumping Unit Establishes Record of 84.7 Per Cent Efficiency for Pump and Motor

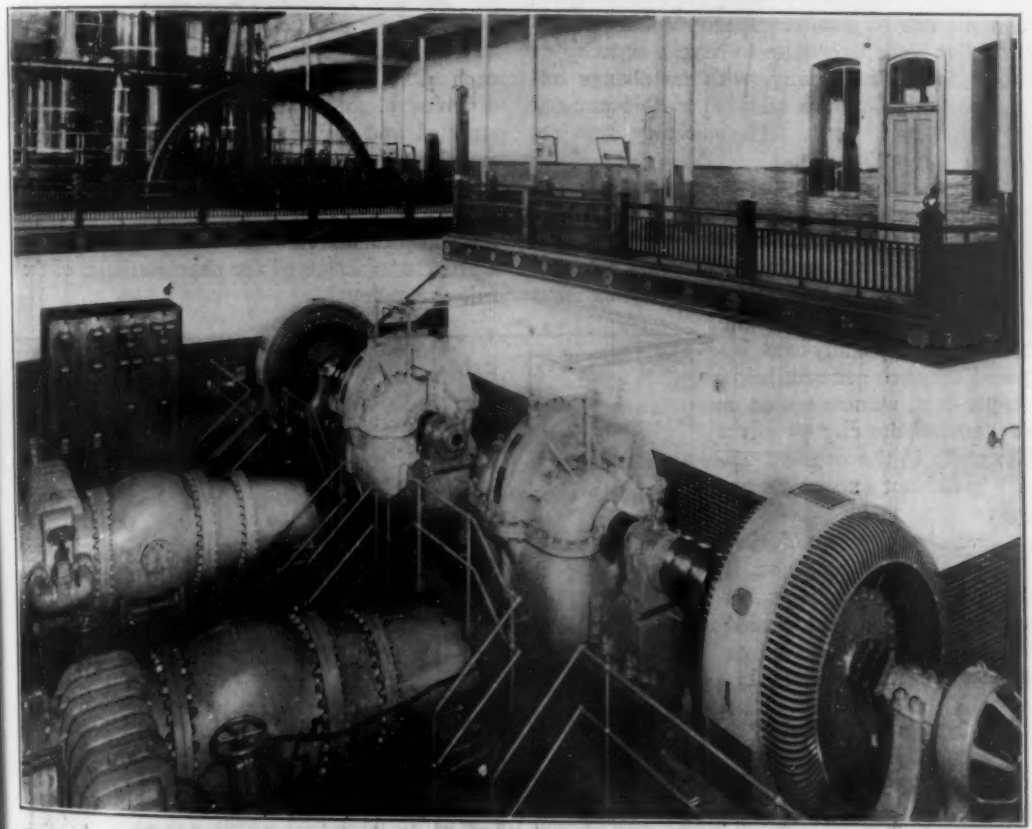
WATER for the city of Detroit, Mich., is pumped from two stations, known as Stations No. 1 and No. 2. Station No. 1 was equipped prior to 1924 with seven reciprocating steam pumping-engines having an aggregate capacity of 162,000,000 gallons per 24 hours, against a head of 120 to 190 feet. Station No. 2 is now equipped with six reciprocating pumping-engines having an aggregate capacity of 201,000,000 gallons per 24 hours, against a 190-foot head. These pumps deliver water to three distinct distribution systems against the following pressures: high, 75 pounds per square inch; intermediate, 65 pounds per square inch; low, 50 pounds per square inch.

In 1925 the demand for water had become so great that steps had to be taken to increase the pumping capacity to forestall a water shortage. It was decided to remove two of the steam pumping-engines of 24,000,000 gallons per 24 hours capacity each in Station No. 1 and to replace them with electric-motor-driven centrifugal pumps.

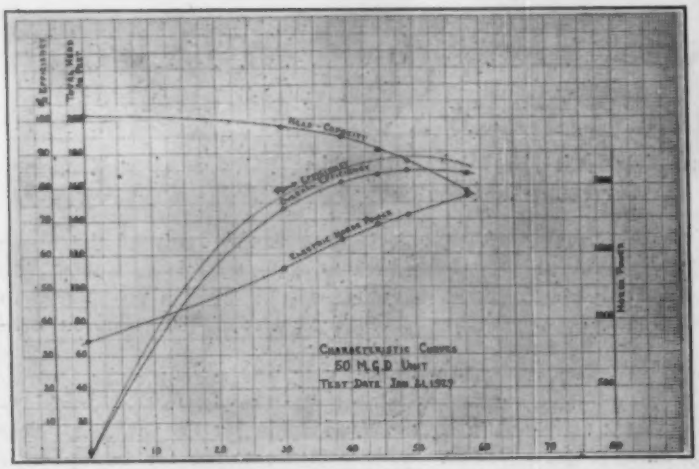
In October, 1925, contracts for the centrifugal pumping units were let to the Worthington Pump & Machinery Corporation, New York. This contract called for two 36-inch centrifugal pumps for direct-connected electric motors, and all auxiliary equipment, such as switchboard equipment, control apparatus and pump priming arrangements, to be installed by the contractor on foundations provided by the city.

The Service Requirements

As the city was facing a water shortage condition, the time available between the letting of



WORTHINGTON 50- AND 70-MILLION-GALLON MOTOR-DRIVEN CENTRIFUGAL PUMPING UNITS IN DETROIT WATER-WORKS



CHARACTERISTIC CURVES OF THE 50,000,000-GALLON PUMP UNIT INSTALLED AT STATION NO. 1, DETROIT

the contract and its completion was short, especially so in view of the fact that a number of unusual problems had to be met. It was specified that one of the pumps should be able to deliver 50,000,000 gallons of water per 24 hours and the other 70,000,000 gallons, against a 170-foot head. The casings for both pumps were to be the same and the pumps so designed that the one of smaller capacity could be converted at some later date to have a capacity of 70,000,000 gallons daily, with no change except the impeller. In addition to this unusual condition to be met, high efficiency was required for both units.

An over-all efficiency of 80 per cent for the combined electric motor and centrifugal pump was required for each of the two units. A bonus was offered for each additional per cent of efficiency over 80 per cent up to a maximum of 85 per cent, and at the same time a penalty was imposed for each per cent below 80 per cent, with an option on the part of the city to reject the units if the over-all efficiency did not exceed 78 per cent.

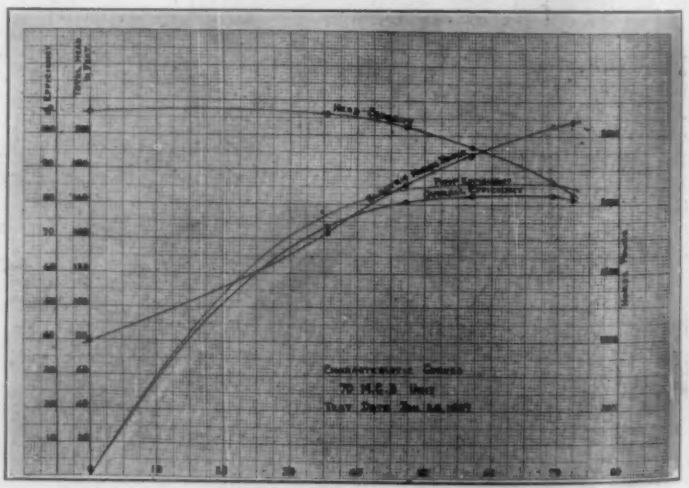
Since the city was facing a water shortage condition, it was important that the pumps be in service at a specified time and that no alterations or adjustments be required.

Relying on the "Model" System

The city of Detroit selected the double suction volume type of pump with horizontal shaft. The manufacturer decided that the most satisfactory way of developing the details of design for these pumps would be through the adoption of the "model" system already well established in the engineering of hydraulic turbines. In this way the manufacturers planned to secure high efficiency and to accomplish the production of a wholly new design of pump in the minimum length of time. It was considered a certainty that the tests of the model pump would predetermine the characteristics of full-size pumps and that the full-size pumps could be put into service immediately after erection without changes or alterations.

Designs for the full-size pumps were immediately prepared on the basis of established experience. Simultaneously, two 10-inch geometrical model pumps similar hydraulically to the full-size pumps were designed and placed in immediate production.

Two model casings, differing slightly from each other, and two model impellers, likewise differing slightly from each other, were constructed and tested. From the tests of these models, two conclusions were drawn. One involved the modification of some of the details of the full-sized pump, the main parts of which were in production. The other conclusion was a predetermination of the characteristics of the full-size pumps.



CHARACTERISTIC CURVES OF 70,000,000-GALLON UNIT INSTALLED AT STATION NO. 1, DETROIT

The Satisfactory Final Tests

The final units were tested after installation at Detroit in January, 1927, by William C. Rudd, Assistant Engineer of Power, Department of Water-Supply, Detroit, with all parties concerned present. The results of these tests are shown by the two sets of characteristic curves for the 50,000,000- and the 70,000,000-gallon units, respectively. The 50,000,000-gallon unit showed a maximum efficiency of pump and motor combined of 84.7 per cent, and a pump efficiency based on the test of the driving motor of 88.5 per cent, under the contract capacity rates at a head of 170 feet. The 70,000,000-gallon unit showed a maximum combined efficiency of 82.7 per cent and a pump efficiency, based on the test of the driving motor, of 86 per cent, which is remarkably high considering the fact that it was required that both pumps have the same casing.

General Electric synchronous motors with direct-connected exciters and motors running at 514 r.p.m. are used to drive the pumps. The full load rating of the motor for the 50,000,000-gallon pump is 2,050 horsepower, and that of the motor for the 70,000,000-gallon pump is 2,600 horsepower. The 70,000,000-gallon unit is the largest motor-driven water-works pump, with respect to horsepower, installed to date.

It is remarkable to note that the performance of the full-size pump was closely determined in advance by the performance of the model pump. The performance of the 70,000,000-gallon unit was practically coincident with that computed from the model. The performance of the 50,000,000-gallon unit departs somewhat from the model, but this slight divergence was anticipated by the designers.

The high efficiency of the type of the model pump as well as of the 50,000,000- and 70,000,000-gallon pumps installed at the Detroit water-works has again been established in the field tests of two 20,000,000-gallon synchronous motor-driven units installed in the new water-works of the city of Dayton, Ohio. These two pumps were designed for a capacity of 20,000,000 gallons daily, against a 185-foot total dynamic head. On the field tests they gave a slight over-capacity and a maximum over-all efficiency of the pump and motor of 84 per cent.

Assessment of Ornamental Lighting Costs Authorized by Model Charter Ordinance

IN order to assist Wisconsin cities to provide for the determination by themselves of the method, including that of special assessment, under which the initial cost of ornamental street lighting shall be met, a model charter ordinance has been drafted by the Municipal Information Bureau of the University of Wisconsin Extension Division, Ford H. MacGregor, Chief. The ordinance, with a statement explaining its purpose and desirability, is given in the Bureau's Information Report No. 58, dated August, 1927.

Ornamental street-lighting systems were first installed in Wisconsin cities some twenty or twenty-five years ago, at the instigation of the business men on the streets involved. In most cases the cost of installation was met by private subscriptions of the business men, and in some cases the business men even paid the cost of operation. The most common practice, however, was for the business men to pay the cost of installation and the city the cost of maintenance and operation.

In 1913, cities and villages were given the authority, upon petition of the property owners, to install ornamental lighting systems, and to determine what portion of the cost should be paid by the abutting property owners and what part by the city at large, provided that not less than two-thirds of the total cost should be assessed to the property owners. Under this law, the cost assessed to the property was assessed according to the front-foot plan. In 1919 the method of assessment was changed from the front-foot plan to the assessed-valuation plan.

In 1925 the law was repealed by a clause slipped into a bill dealing with an entirely different subject during the very last days of the session and passed without the city officials of the state knowing anything about it.

Two bills introduced in the 1927 session to re-enact the former provisions were killed on the theory that cities already have the authority by charter ordinance under the constitutional home rule amendment adopted in 1924 to include such provisions in their charters, and that it is useless for the Legislature to attempt to give cities authority to take actions which they already have.

A charter ordinance may be passed by a city council on its own initiative, or it may be submitted by initiative of the people. Unless a referendum is called for, the ordinance goes into effect sixty days after passage and publication.

The ordinance presented herewith gives the council more latitude in assessing the cost than did the former law or the two proposed bills. The council may pay all or any part of the cost from the general fund, or it may assess all or any part not merely against abutting property but against any property benefited, and according to any plan of assessment that the council deems reasonable.

The Mayor and Council of the city of ..... do ordain as follows:

Section 1. Section 66.06 of the statutes is hereby amended in so far as it applies to the city of ..... by the addition of a new sub-section to read: Section 66.06 (16). The common council is empowered to provide for the construction, maintenance, and operation of an ornamental street lighting system on any street or public ground within the city, and to provide for defraying the cost of the same. Such cost may be paid in whole or in part from the general fund of the city or from special assessments levied on the property benefited in such proportion and according to such method as the council shall determine.

Section 2. This ordinance shall take effect sixty days after passage and publication in accordance with the provisions of sub-section (5) of section 66.001 of the statutes.

Costs of City Government, Net Debt, Per Capita Valuations and Levies: 1926

From the Forthcoming Report of the Bureau of the Census, U. S. Department of Commerce, on "Financial Statistics of Cities Having a Population of Over 30,000 : 1926."

	Group IV Cities of 50,000 to 100,000	Governmental-Cost Payments for Expenses of Municipal Departments: 1926						
		All General Departments	General Government	Protection to Person and Property	Conservation of Health	Sanitation	Highways	Charities, Hospitals and Corrections
86	Tampa, Fla.	$2,983,795	$191,497	$562,600	$65,229	$326,803	$251,733	$215,528
	Per capita	30.17	1.94	5.69	0.66	3.30	2.55	2.18
	Per cent of total	....	6.4	18.8	2.2	11.0	8.5	7.2
87	Knoxville, Tenn.	2,283,925	169,880	466,983	77,770	136,652	326,054	222,499
	Per capita	23.33	1.74	4.76	0.79	1.40	3.33	2.27
	Per cent of total	....	7.4	20.4	3.4	6.0	14.3	9.7
88	Savannah, Ga.	1,708,559	165,672	522,179	58,324	264,519	134,807	63,286
	Per capita	18.66	1.72	5.41	0.61	2.74	1.40	0.66
	Per cent of total	....	9.2	29.0	3.2	14.9	7.5	3.5
89	Evansville, Ind.	2,093,605	70,332	503,159	35,346	88,510	127,390	19,761
	Per capita	22.01	0.74	5.28	0.37	0.93	1.34	0.21
	Per cent of total	....	3.4	24.0	1.7	4.2	6.1	0.9
90	Allentown, Pa.	1,921,436	139,696	255,872	36,561	148,716	233,114	3,000
	Per capita	20.31	1.48	2.71	0.39	1.57	2.46	0.03
	Per cent of total	....	7.3	13.3	1.9	7.7	12.1	0.2
91	Long Beach, Calif.	4,850,490	332,567	751,968	72,026	369,670	562,831	41,688
	Per capita	51.38	3.52	7.96	0.76	3.92	5.96	0.44
	Per cent of total	....	6.9	15.6	1.5	7.6	11.6	0.9
92	Lawrence, Mass.	3,598,786	159,857	742,268	124,226	298,865	448,839	188,214
	Per capita	38.48	1.71	7.94	1.33	3.20	4.80	2.01
	Per cent of total	....	4.4	20.7	3.5	8.3	12.5	5.2
93	Schenectady, N. Y.	4,067,558	246,112	636,582	109,189	592,073	280,992	150,150
	Per capita	43.74	2.65	6.85	1.17	6.37	3.02	1.61
	Per cent of total	....	6.1	15.6	2.7	14.6	6.9	3.7
94	Wichita, Kans.	2,443,678	92,579	462,886	35,911	112,592	147,004	34,166
	Per capita	26.42	1.00	5.01	0.39	1.22	1.59	0.37
	Per cent of total	....	3.8	19.0	1.5	4.6	6.1	1.4
95	Bayonne, N. J.	3,935,797	221,238	1,007,200	80,294	304,560	185,337	119,257
	Per capita	43.25	2.43	11.07	0.88	3.35	2.04	1.31
	Per cent of total	....	5.6	25.5	2.0	7.7	4.7	3.0
96	Hamtramck, Mich.	1,817,406	164,375	364,819	38,409	206,995	103,315	75,773
	Per capita	21.46	1.94	4.31	0.45	2.44	1.23	0.89
	Per cent of total	....	9.0	20.1	2.1	11.4	5.7	4.2
97	Harrisburg, Pa.	2,309,611	118,345	284,445	33,807	232,897	232,622	6,000
	Per capita	27.30	1.40	3.36	0.40	2.75	2.75	0.07
	Per cent of total	....	5.1	12.3	1.5	10.1	10.1	0.3
98	Manchester, N. H.	2,279,698	117,371	530,292	77,143	255,957	285,892	59,278
	Per capita	27.14	1.40	6.31	0.92	3.05	3.40	0.71
	Per cent of total	....	5.1	23.3	3.4	11.2	12.6	2.6
99	Peoria, Ill.	2,191,056	147,217	424,408	93,089	134,700	189,458	201
	Per capita	26.56	1.78	5.15	1.13	1.63	2.30	*
	Per cent of total	....	6.7	19.4	4.2	6.1	8.6	*
100	South Bend, Ind.	2,405,096	90,156	536,393	47,729	87,547	142,962	30,000
	Per capita	30.54	1.10	6.57	0.58	1.07	1.75	0.37
	Per cent of total	....	3.6	21.5	1.9	3.5	5.8	1.2
101	Gary, Ind.	2,586,858	161,495	482,596	41,030	97,109	90,869	.....
	Per capita	32.02	2.00	5.97	0.51	1.20	1.12	....
	Per cent of total	....	6.2	16.6	1.6	3.8	3.5	....
102	Rockford, Ill.	2,017,452	122,003	423,979	55,342	94,112	146,510	8,550
	Per capita	25.63	1.55	5.38	0.70	1.20	1.86	0.11
	Per cent of total	....	6.0	21.1	2.7	4.7	7.3	0.4
103	St. Joseph, Mo.	1,928,259	125,147	482,610	29,368	48,374	152,667	23,689
	Per capita	24.60	1.60	6.16	0.37	0.62	1.95	0.30
	Per cent of total	....	6.5	25.0	1.5	2.5	7.9	1.2
104	Wilkes-Barre, Pa.	2,257,450	158,888	386,850	37,517	135,662	261,536	2,000
	Per capita	28.83	2.03	4.94	0.48	1.73	3.34	0.03
	Per cent of total	....	7.0	17.1	1.7	6.0	11.6	0.1
105	Sioux City, Iowa	2,311,376	92,594	371,893	22,145	158,014	170,277	1,536
	Per capita	29.94	1.20	4.81	0.29	2.05	2.21	0.02
	Per cent of total	....	4.0	16.1	1.0	6.8	7.4	0.1
106	Portland, Me.	2,621,224	149,335	507,575	30,302	171,714	402,708	188,988
	Per capita	34.31	1.95	6.64	0.40	2.25	5.27	2.47
	Per cent of total	....	5.7	19.4	1.2	6.6	15.4	7.2
107	Little Rock, Ark.	1,437,813	100,116	342,941	35,962	38,854	144,445	92,033
	Per capita	18.94	1.32	4.52	0.47	0.51	1.90	1.21
	Per cent of total	....	7.0	23.9	2.5	2.7	10.1	6.4
108	Highland Park, Mich.	3,063,016	148,013	529,283	52,800	181,645	295,475	355,733
	Per capita	41.06	1.98	7.10	0.71	2.43	3.96	4.77
	Per cent of total	....	4.8	17.3	1.7	5.9	9.6	11.6
109	Charleston, S. C.	1,549,140	78,871	443,866	37,040	114,382	101,387	173,444
	Per capita	20.91	1.06	5.99	0.50	1.54	1.37	2.34
	Per cent of total	....	5.1	28.6	2.4	7.4	6.6	11.2
110	Sacramento, Calif.	3,343,034	198,641	680,702	62,371	289,394	172,906	31,136
	Per capita	45.55	2.71	9.27	0.85	3.94	2.36	0.42
	Per cent of total	....	5.9	20.4	1.9	8.7	5.2	0.9
111	Binghamton, N. Y.	2,993,053	136,373	484,533	41,274	167,803	283,139	427,117
	Per capita	41.06	1.87	6.65	0.57	2.30	3.88	5.86
	Per cent of total	....	4.6	16.2	1.4	5.6	9.4	14.3
112	Saginaw, Mich.	2,079,893	144,366	380,117	51,112	65,641	147,827	46,288
	Per capita	28.61	1.99	5.22	0.70	0.90	2.03	0.64
	Per cent of total	....	6.9	18.3	2.5	3.2	7.1	2.2

For notes, see end of table. Numbers at left of city names indicate rank in population.

Through the courtesy of W. M. Steuart, Director, and Starke M. Grogan, Chief Statistician for Statistics of States and Cities of the Bureau of the Census, THE AMERICAN CITY *is again privileged to publish, in advance of issuance by the Department of Commerce, a tabulation of important financial statistics of cities. Those here presented are for the fiscal year* 1926 *and cover all cities having from* 50,000 *to* 100,000 *population, according to the Census Bureau's estimates of population for the middle of the fiscal year reported.*

Similar figures for cities of over 100,000 *population and for places of from* 30,000 *to* 50,000 *population will be published in* THE AMERICAN CITY *for November and December,* 1927*:*

GOVERNMENTAL-COST PAYMENTS, CONTINUED

Schools	Libraries	Recreation	Miscellaneous	Net Debt Total	Net Debt Per Capita	Per Capita Assessed Valuation for City Government	Per Capita Levy for All Purposes	Per Capita Levy for Government of City	Estimated Population
$841,586	$42,646	$375,286	$110,797	$11,474,212	$116.02	$870.02	$53.34	$32.15	98,900
8.51	0.43	3.79	1.12						
28.2	1.4	12.6	3.7						
797,251	34,319	15,999	36,518	15,651,505	159.87	1,166.89	39.56	28.47	97,900
8.14	0.35	0.16	0.37						
34.9	1.5	0.7	1.6						
391,944	31,125	50,715	115,986	4,837,932	50.19	796.74	26.65	17.70	96,400
4.07	0.32	0.53	1.20						
21.8	1.7	2.8	6.4						
999,707	79,976	107,904	61,520	4,073,081	42.83	1,369.52	40.62	29.72	95,100
10.51	0.84	1.13	0.65						
47.8	3.8	5.2	2.9						
958,450	18,750	46,127	81,150	4,606,606	48.70	853.37	26.87	22.53	94,600
10.13	0.20	0.49	0.86						
49.9	1.0	2.4	4.2						
2,218,897	113,592	322,679	64,572	15,603,601	165.29	1,744.72	62.93	42.41	94,400
23.51	1.20	3.42	0.68						
45.7	2.3	6.7	1.3						
1,349,376	46,222	78,728	162,191	5,513,987	58.96	1,391.30	41.19	35.09	93,527
14.43	0.49	0.84	1.73						
37.5	1.3	2.2	4.5						
1,699,102	40,000	74,930	238,428	8,291,944	89.16	2,003.78	49.94	41.61	93,000
18.27	0.43	0.81	2.56						
41.8	1.0	1.8	5.9						
1,334,983	26,952	130,863	65,742	5,386,550	58.23	1,329.07	40.63	31.69	92,500
14.43	0.29	1.41	0.71						
54.6	1.1	5.4	2.7						
1,783,378	47,862	77,461	109,210	9,646,160	106.00	1,706.05	66.59	46.63	91,000
19.60	0.53	0.85	1.20						
45.3	1.2	2.0	2.8						
788,836	12,477	6,298	58,109	4,226,209	49.90	1,441.53	38.60	31.97	84,700
9.29	0.15	0.07	0.69						
43.3	0.7	0.3	3.2						
1,226,586	20,000	77,784	77,125	7,171,896	84.77	1,009.85	38.91	32.82	84,600
14.50	0.24	0.92	0.91						
53.1	0.9	3.4	3.3						
819,864	39,473	46,392	48,036	5,264,278	62.67	1,410.95	36.84	30.19	84,000
9.76	0.47	0.55	0.57						
36.0	1.7	2.0	2.1						
957,804	53,388	129,315	61,476	975,418	11.82	526.47	35.12	27.32	82,500
11.61	0.65	1.57	0.75						
43.7	2.4	5.9	2.8						
1,358,673	45,191	114,976	41,469	5,301,985	64.90	2,235.53	54.99	40.35	81,700
16.63	0.55	1.41	0.51						
54.5	1.8	4.6	1.7						
1,488,817	62,156	132,155	30,631	3,352,523	41.49	1,747.09	54.65	43.24	80,800
18.43	0.77	1.64	0.38						
57.6	2.4	5.1	1.2						
1,009,965	53,849	82,350	20,783	2,479,380	31.50	606.56	43.49	31.91	78,700
12.83	0.68	1.05	0.26						
50.1	2.7	4.1	1.0						
914,406	35,252	82,977	33,769	3,049,760	38.90	1,044.26	35.90	26.76	78,400
11.66	0.45	1.06	0.43						
47.4	1.8	4.3	1.8						
1,109,558	.....	57,836	107,603	3,679,519	46.99	1,354.52	49.54	39.28	78,300
14.17	....	0.74	1.37						
49.2	....	2.6	4.8						
1,335,600	44,371	85,804	29,142	3,829,644	49.61	453.92	44.99	35.36	77,200
17.30	0.57	1.11	0.38						
57.8	1.9	3.7	1.3						
961,209	24,497	95,952	88,944	8,818,224	115.42	1,476.49	48.55	36.61	76,400
12.58	0.32	1.26	1.16						
36.7	0.9	3.7	3.4						
631,579	14,999	18,871	18,043	2,803,436	36.94	791.51	29.18	15.37	75,900
8.32	0.20	0.25	0.24						
43.9	1.0	1.3	1.3						
1,311,111	29,430	77,276	83,241	7,017,063	94.06	2,729.56	60.16	47.49	74,600
17.58	0.38	1.04	1.12						
42.8	0.9	2.5	2.7						
448,868	100	41,474	109,708	8,690,801	117.28	315.65	32.78	22.57	74,100
6.06	"	0.56	1.48						
29.0	"	2.7	7.1						
1,589,415	36,908	208,859	72,702	11,997,195	163.45	1,354.51	61.08	38.79	73,400
21.65	0.50	2.85	0.99						
47.5	1.1	6.2	2.2						
1,194,496	29,944	49,003	179,371	6,387,548	87.62	1,604.94	59.18	50.10	72,900
16.39	0.41	0.67	2.46						
39.9	1.0	1.6	6.0						
1,153,296	38,697	27,128	25,421	4,421,232	60.81	1,254.69	45.65	34.03	72,700
15.86	0.53	0.37	0.35						
55.4	1.9	1.3	1.2						

For notes, see end of table. Numbers at left of city names indicate rank in population.

	Group IV Cities of 50,000 to 100,000	Governmental-Cost Payments for Expenses of Municipal Departments: 1926						
		All General Departments	General Government	Protection to Person and Property	Conservation of Health	Sanitation	Highways	Charities, Hospitals and Corrections
113	East St. Louis, Ill.	$1,473,605	$140,990	$314,385	$10,772	$51,357	$132,250	.....
	Per capita	20.38	1.95	4.35	0.15	0.71	1.83	.....
	Per cent of total		9.6	21.4	0.7	3.5	9.0	.....
114	Troy, N. Y.	2,664,244	182,613	610,075	40,721	241,865	187,884	$313,350
	Per capita	36.85	2.53	8.44	0.56	3.35	2.60	4.33
	Per cent of total		6.9	22.9	1.5	9.1	7.1	11.8
115	Johnstown, Pa.	2,073,150	126,448	321,653	32,165	124,119	268,018	807
	Per capita	28.71	1.75	4.45	0.45	1.72	3.71	0.01
	Per cent of total		6.1	15.5	1.6	6.0	12.9	*
116	Chattanooga, Tenn.	1,824,971	94,566	438,392	46,522	100,231	143,864	215,059
	Per capita	25.31	1.31	6.08	0.65	1.39	2.00	2.98
	Per cent of total		5.2	24.0	2.5	5.5	7.8	11.8
117	Terre Haute, Ind.	1,938,594	53,690	443,808	19,323	39,845	104,095	10,500
	Per capita	27.24	0.75	6.18	0.27	0.55	1.46	0.15
	Per cent of total		2.7	22.7	1.0	2.0	5.4	0.5
118	Lansing, Mich.	2,172,138	122,481	428,779	30,098	185,285	155,302	50,121
	Per capita	30.34	1.71	5.98	0.42	2.59	2.17	0.70
	Per cent of total		5.6	19.7	1.4	8.5	7.1	2.3
119	Pawtucket, R. I.	1,862,871	168,005	349,111	14,552	112,242	246,555	72,575
	Per capita	26.24	2.37	4.91	0.20	1.58	3.47	1.02
	Per cent of total		9.0	18.8	0.8	6.0	13.2	3.9
120	Chester, Pa.	1,268,226	94,329	183,746	22,253	60,201	104,259	10,163
	Per capita	18.01	1.34	2.61	0.32	0.86	1.48	0.14
	Per cent of total		7.4	14.5	1.8	4.7	8.2	0.8
121	Winston-Salem, N. C.	1,391,571	64,609	258,761	42,279	99,074	104,288	134,573
	Per capita	19.82	0.92	3.69	0.60	1.41	1.48	1.92
	Per cent of total		4.6	18.6	3.0	7.1	7.5	9.7
122	Springfield, Ohio	1,459,181	111,392	191,696	19,410	14,858	155,127	153,866
	Per capita	20.79	1.59	2.73	0.28	0.21	2.21	2.19
	Per cent of total		7.6	13.2	1.3	1.0	10.6	10.5
123	Passaic, N. J.	2,714,963	154,369	619,570	49,368	290,272	197,905	76,560
	Per capita	38.84	2.21	8.87	0.71	4.15	2.84	1.10
	Per cent of total		5.7	22.9	1.8	10.7	7.3	2.8
124	Racine, Wis.	1,730,935	81,370	277,868	45,330	56,645	140,723	24,839
	Per capita	24.94	1.17	4.00	0.65	0.82	2.03	0.36
	Per cent of total		4.7	16.0	2.6	3.3	8.2	1.4
125	New Britain, Conn.	2,026,969	105,083	370,238	38,583	86,737	204,871	97,263
	Per capita	29.63	1.54	5.41	0.56	1.27	3.00	1.42
	Per cent of total		5.2	18.2	1.9	4.3	10.1	4.8
126	Hoboken, N. J.	3,216,599	206,707	923,025	46,944	234,812	97,664	50,520
	Per capita	47.19	3.03	13.55	0.69	3.44	1.43	0.74
	Per cent of total		6.4	28.6	1.5	7.3	3.0	1.6
127	Berkeley, Calif.	2,541,922	125,296	415,488	40,567	134,395	205,229	28,068
	Per capita	37.94	1.87	6.20	0.61	2.01	3.07	0.42
	Per cent of total		4.9	16.4	1.6	5.3	8.1	1.1
128	Altoona, Pa.	1,440,675	79,438	208,561	18,514	55,386	188,896	3,187
	Per capita	21.50	1.19	3.11	0.28	0.83	2.82	0.05
	Per cent of total		5.5	14.5	1.3	3.8	13.1	0.2
129	Mobile, Ala.	1,314,191	81,736	268,397	28,314	87,657	113,285	64,120
	Per capita	19.73	1.23	4.03	0.43	1.32	1.70	0.96
	Per cent of total		6.2	20.4	2.2	6.7	8.6	4.9
130	Shreveport, La.	1,516,807	104,480	384,890	51,263	130,913	130,721	21,873
	Per capita	23.19	1.60	5.88	0.78	2.00	2.00	0.33
	Per cent of total		6.9	25.4	3.4	8.6	8.6	1.4
131	Cicero, Ill.	1,458,820	132,957	252,417	28,396	118,835	111,339	3,461
	Per capita	22.31	2.03	3.85	0.43	1.82	1.70	0.05
	Per cent of total		9.1	17.3	1.9	8.1	7.6	0.2
132	Brockton, Mass.	2,437,491	139,032	480,157	91,935	195,241	257,750	173,038
	Per capita	37.30	2.13	7.35	1.41	2.99	3.95	2.65
	Per cent of total		5.7	19.7	3.8	8.0	10.5	7.1
133	Bethlehem, Pa.	1,361,331	143,520	169,813	17,771	34,775	143,937	2,500
	Per capita	21.14	2.23	2.64	0.28	0.54	2.24	0.04
	Per cent of total		10.5	12.5	1.3	2.6	10.6	0.2
134	Huntington, W. Va.	1,751,007	64,265	339,835	18,596	91,694	92,090	28,726
	Per capita	27.28	1.00	5.29	0.29	1.43	1.43	0.45
	Per cent of total		3.7	19.4	1.1	5.2	5.3	1.6
135	Springfield, Ill.	1,708,685	145,558	311,263	27,253	72,451	97,896	8,978
	Per capita	26.70	2.27	4.87	0.43	1.13	1.53	0.14
	Per cent of total		8.5	18.2	1.6	4.2	5.7	0.5
136	Union City, N. J.	2,054,930	153,964	536,871	37,733	79,084	167,148	21,730
	Per capita	32.31	2.42	8.44	0.59	1.24	2.63	0.34
	Per cent of total		7.5	26.1	1.8	3.8	8.1	1.1
137	Quincy, Mass.	2,659,889	162,731	480,719	71,568	170,208	384,953	235,499
	Per capita	42.22	2.58	7.63	1.14	2.70	6.11	3.74
	Per cent of total		6.1	18.1	2.7	6.4	14.5	8.9
138	Roanoke, Va.	1,287,944	125,658	299,535	22,501	103,926	151,986	37,486
	Per capita	22.42	2.03	4.84	0.36	1.68	2.46	0.61
	Per cent of total		9.1	21.6	1.6	7.5	11.0	2.7
139	Lincoln, Neb.	1,956,437	110,459	250,336	61,686	144,045	104,602	166,443
	Per capita	31.71	1.79	4.05	1.00	2.34	1.69	2.70
	Per cent of total		5.6	12.7	3.2	7.4	5.4	8.5
140	East Orange, N. J.	2,329,559	113,760	494,579	44,639	284,390	217,115	26,318
	Per capita	37.76	1.84	8.01	0.72	4.61	3.52	0.43
	Per cent of total		4.9	21.2	1.9	12.2	9.3	1.1
141	Holyoke, Mass.	2,517,226	167,506	561,509	123,972	176,046	177,780	179,376
	Per capita	41.61	2.77	9.28	2.05	2.91	2.94	2.96
	Per cent of total		6.7	22.3	4.9	7.0	7.1	7.1
142	Portsmouth, Va.	963,129	103,389	190,119	36,828	74,556	99,110	22,627
	Per capita	16.08	1.73	3.17	0.61	1.24	1.66	0.38
	Per cent of total		10.7	19.8	3.8	7.7	10.3	2.3
143	Jackson, Mich.	1,359,827	80,004	201,726	55,658	49,974	84,899	168,396
	Per capita	22.78	1.34	3.38	0.93	0.84	1.42	2.82
	Per cent of total		5.9	14.8	4.1	3.7	6.2	12.4

For notes, see end of table. Numbers at left of city names indicate rank in population.

GOVERNMENTAL-COST PAYMENTS, CONTINUED

Schools	Libraries	Recreation	Miscellaneous	Net Debt Total	Net Debt Per Capita	Per Capita Assessed Valuation for City Government	Per Capita Levy for All Purposes	Per Capita Levy for Government of City	Estimated Population
$726,252	$19,256	$55,977	$22,357	$2,302,704	$31.85	$351.69	$33.04	$23.95	72,300
10.04	0.27	0.77	0.31						
49.3	1.3	3.8	1.5						
844,852	23,000	54,894	164,990	6,208,176	85.87	935.92	46.53	37.33	72,300
11.69	0.32	0.76	2.28						
31.7	0.9	2.1	6.2						
1,114,731	.....	23,584	61,625	7,478,202	103.58	1,100.31	39.55	33.28	72,200
15.44	....	0.33	0.85						
53.8	....	1.1	3.0						
691,149	32,545	34,577	28,066	8,698,505	120.65	1,481.34	43.55	25.78	72,100
9.59	0.45	0.48	0.39						
37.9	1.8	1.9	1.5						
1,103,679	49,181	73,863	59,610	3,104,723	43.18	1,227.97	44.70	32.17	71,900
15.35	0.68	1.03	0.83						
56.4	2.5	3.8	3.0						
1,074,285	24,495	67,865	33,427	5,776,999	80.68	2,007.14	53.49	41.83	71,600
15.00	0.34	0.95	0.47						
49.5	1.1	3.1	1.5						
779,003	36,650	36,001	48,177	8,958,383	126.17	1,847.01	33.85	31.64	71,000
10.97	0.52	0.51	0.68						
41.8	2.0	1.9	2.6						
708,942	2,000	11,434	70,899	3,731,202	53.00	964.54	24.62	21.22	70,400
10.07	0.03	0.16	1.01						
55.9	0.2	0.9	5.6						
642,260	14,902	29,013	1,812	9,158,994	130.47	1,821.77	28.24	18.22	70,200
9.15	0.21	0.41	0.03						
46.2	1.1	2.1	0.1						
707,307	20,193	16,353	68,979	2,844,454	40.52	1,671.11	29.41	23.93	70,200
10.08	0.29	0.23	0.98						
48.5	1.4	1.1	4.7						
1,175,533	29,468	56,456	65,462	7,321,527	104.74	1,412.97	49.51	37.53	69,900
16.82	0.42	0.81	0.94						
43.2	1.1	2.1	2.4						
923,967	39,855	83,162	57,176	3,647,000	52.55	1,548.93	31.03	25.64	69,400
13.31	0.57	1.20	0.82						
53.4	2.3	4.8	3.3						
976,807	32,000	72,265	43,122	5,872,695	85.86	1,544.53	36.68	35.09	68,400
14.28	0.47	1.06	0.63						
48.2	1.6	3.6	2.1						
1,386,248	42,440	80,670	147,569	9,642,522	141.46	1,468.32	68 17	50.61	[1]68,166
20.34	0.62	1.18	2.16						
43.1	1.3	2.5	4.6						
1,395,329	81,296	96,725	19,529	3,892,270	58.09	1,223.34	48.97	35.97	67,000
20.83	1.21	1.44	0.29						
54.9	3.2	3.8	0.8						
822,565	.....	12,377	51,751	3,661,897	54.66	1,014.64	24.56	19.79	67,000
12.28	....	0.18	0.77						
57.1	....	0.9	3.6						
550,292	600	62,526	57,264	4,361,539	65.49	731.07	24.86	14.62	66,600
8.26	0.01	0.94	0.86						
41.9	3	4.8	4.4						
587,624	12,066	58,618	34,359	6,152,468	94.07	1,690.75	53.05	28.96	65,400
8.99	0.18	0.90	0.53						
38.7	0.8	3.9	2.3						
769,695	16,342	16,807	8,568	1,356,450	20.74	210.42	30.44	25.48	65,400
11.77	0.25	0.26	0.13						
52.8	1.1	1.2	0.6						
933,771	29,780	29,166	107,621	3,615,792	55.34	1,111.21	42.23	37.26	[1]65,343
14.29	0.46	0.45	1.65						
38.3	1.2	1.2	4.4						
744,031	35,619	17,018	52,347	6,850,586	106.38	970.80	29.19	24.27	64,400
11.55	0.55	0.26	0.81						
54.7	2.6	1.3	3.8						
1,071,176	15,132	23,006	6,577	3,327,485	51.83	2,174.47	47.98	36.73	64,200
16.68	0.24	0.36	0.10						
61.2	0.9	1.3	0.4						
858,729	29,495	134,546	22,516	1,863,730	29.12	463.38	41.33	33.46	64,000
13.42	0.46	2.10	0.35						
50.3	1.7	7.9	1.3						
955,792	26,567	8,013	68,028	2,991,647	47.04	1,024.22	43.58	31.35	63,600
15.03	0.42	0.13	1.07						
46.5	1.3	0.4	3.3						
935,003	34,466	98,627	86,115	5,078,000	80.60	1,936.01	53.44	48.92	63,000
14.84	0.55	1.57	1.37						
35.2	1.3	3.7	3.2						
603,498	14,682	15,515	13,157	5,557,759	89.79	1,091.26	28.10	23.60	61,900
9.75	0.24	0.25	0.21						
43.5	1.1	1.1	0.9						
1,002,966	28,154	75,515	11,631	3,808,745	61.73	1,768.19	43.65	38.19	61,700
16.26	0.46	1.22	0.19						
51.3	1.4	3.9	0.6						
967,055	62,114	51,391	68,198	4,980,985	80.73	1,692.19	55.03	38.81	61,700
15.67	1.01	0.83	1.11						
41.5	2.7	2.2	2.9						
929,495	37,545	67,829	96,159	4,406,819	72.84	1,934.83	44.50	37.70	60,500
15.36	0.62	1.12	1.59						
36.9	1.5	2.7	3.8						
394,794	3,000	12,995	25,711	8,223,587	137.20	646.71	17.49	15.49	59,900
6.59	0.05	0.22	0.43						
41.0	0.3	1.3	2.7						
626,884	20,371	48,507	23,408	5,516,660	92.41	1,393.60	36.74	23.82	59,700
10.50	0.34	0.81	0.39						
46.1	1.5	3.6	1.7						

For notes, see end of table. Numbers at left of city names indicate rank in population.

	Group IV Cities of 50,000 to 100,000	GOVERNMENTAL-COST PAYMENTS FOR EXPENSES OF MUNICIPAL DEPARTMENTS: 1926						
		All General Departments	General Government	Protection to Person and Property	Conservation of Health	Sanitation	Highways	Charities, Hospitals and Corrections
144	Lakewood, Ohio	$2,015,591	$68,827	$293,464	$27,989	$122,478	$201,887	$5,985
	Per capita	33.88	1.16	4.94	0.47	2.06	3.39	0.10
	Per cent of total		3.4	14.6	1.4	6.1	10.0	0.3
145	Topeka, Kans	1,434,150	61,704	267,790	30,162	100,196	117,807	24,253
	Per capita	24.10	1.04	4.50	0.51	1.68	1.98	0.41
	Per cent of total		4.3	18.7	2.1	7.0	8.3	1.7
146	Fresno, Calif	2,318,603	91,087	632,532	33,288	64,036	153,215	6,749
	Per capita	39.04	1.53	10.65	0.56	1.08	2.58	0.11
	Per cent of total		3.9	27.3	1.4	2.8	6.6	0.3
147	Macon, Ga	1,227,548	74,308	298,568	26,392	62,603	109,730	194,719
	Per capita	20.74	1.26	5.04	0.45	1.06	1.85	3.29
	Per cent of total		6.1	24.3	2.1	5.1	8.9	15.9
148	Wichita Falls, Tex	799,733	63,214	161,644	8,381	32,108	75,082	6,303
	Per capita		[3]	[3]	[3]	[3]	[3]	[3]
	Per cent of total		7.9	20.2	1.0	4.0	9.4	0.8
149	Covington, Ky	1,130,801	123,418	251,084	10,065	123,872	154,331	12,437
	Per capita	19.33	2.11	4.28	0.17	2.12	2.64	0.21
	Per cent of total		10.9	22.2	0.9	11.0	13.7	1.1
150	Niagara Falls, N. Y	2,462,826	166,893	403,335	67,029	209,809	247,572	20,575
	Per capita	42.24	2.86	6.91	1.15	3.60	4.25	0.35
	Per cent of total		6.8	16.3	2.7	8.5	10.1	0.8
151	Pasadena, Calif	3,447,755	198,741	473,712	47,090	267,682	313,743	37,176
	Per capita	59.96	3.46	8.24	0.82	4.66	5.46	0.65
	Per cent of total		5.8	13.7	1.4	7.8	9.1	1.1
152	Lancaster, Pa	1,068,682	98,957	166,692	16,464	50,635	120,699	2,261
	Per capita	18.72	1.73	2.92	0.29	0.89	2.11	0.04
	Per cent of total		9.3	15.6	1.5	4.7	11.3	0.2
153	Wheeling, W. Va	1,662,231	102,056	344,393	31,841	103,456	127,509	5,085
	Per capita	29.57	1.82	6.13	0.57	1.84	2.27	0.09
	Per cent of total		6.1	20.7	1.9	6.2	7.7	0.3
154	Augusta, Ga	1,424,326	69,843	285,964	17,762	59,109	151,529	271,032
	Per capita	25.57	1.25	5.13	0.32	1.06	2.72	4.87
	Per cent of total		4.9	20.1	1.2	4.1	10.6	19.0
155	Newton, Mass	3,176,482	170,712	518,396	44,739	257,743	594,777	44,020
	Per capita	58.07	3.12	9.47	0.82	4.71	10.87	0.80
	Per cent of total		5.4	16.3	1.4	8.1	18.7	1.4
156	Kalamazoo, Mich	1,549,480	81,682	309,928	27,435	44,059	95,504	36,770
	Per capita	28.43	1.50	5.69	0.50	0.81	1.75	0.67
	Per cent of total		5.3	20.0	1.8	2.8	6.1	2.4
157	Decatur, Ill	1,184,108	83,924	170,281	15,688	34,087	64,655	3,250
	Per capita	21.85	1.55	3.15	0.29	0.63	1.19	0.06
	Per cent of total		7.1	14.3	1.3	2.9	5.5	0.3
158	Charlotte, N. C	1,342,465	109,537	305,887	45,699	149,082	107,866	13,377
	Per capita	24.95	2.04	5.69	0.85	2.77	2.01	0.25
	Per cent of total		8.2	22.8	3.4	11.1	8.0	1.0
159	Atlantic City, N. J	4,917,942	267,243	1,431,773	73,473	455,572	476,772	171,391
	Per capita	91.41	4.97	26.61	1.37	8.47	8.86	3.30
	Per cent of total		5.4	29.1	1.5	9.3	9.7	3.6
160	Oak Park, Ill	1,642,509	64,471	214,194	24,480	114,666	131,547	1,800
	Per capita	30.70	1.21	4.00	0.46	2.14	2.46	0.03
	Per cent of total		3.9	13.1	1.5	7.0	8.0	0.1
161	Kenosha, Wis	1,621,709	86,861	291,509	46,261	78,779	134,646	47,398
	Per capita	30.77	1.65	5.54	0.88	1.49	2.56	0.90
	Per cent of total		5.4	18.0	2.9	4.9	8.3	2.9
162	Davenport, Iowa	1,624,931	99,218	301,723	19,319	87,256	106,672	.....
	Per capita	30.97	1.89	5.75	0.37	1.66	2.03	....
	Per cent of total		6.1	18.6	1.2	5.4	6.5	....
163	Malden, Mass	1,838,106	87,370	349,545	46,855	152,033	192,598	56,500
	Per capita	35.08	1.67	6.66	0.89	2.90	3.68	1.08
	Per cent of total		4.8	19.0	2.5	8.3	10.5	3.1
164	Hammond, Ind	1,751,828	112,925	289,666	7,375	139,326	85,984	6,206
	Per capita	33.50	2.16	5.55	0.14	2.66	1.64	0.12
	Per cent of total		6.4	16.5	0.4	8.0	4.9	0.4
165	Mount Vernon, N. Y	2,614,510	162,708	423,009	36,646	182,658	270,389	112,894
	Per capita	50.38	2.14	8.15	0.71	3.52	5.21	2.18
	Per cent of total		6.2	16.2	1.4	7.0	10.4	4.3
166	Beaumont, Tex	945,295	70,909	227,365	29,051	75,675	89,563	6,500
	Per capita	18.32	1.37	4.41	0.56	1.47	1.73	0.13
	Per cent of total		7.5	24.1	3.1	8.0	9.5	0.7
167	Cedar Rapids, Iowa	1,364,869	78,436	198,666	9,771	85,125	90,340	900
	Per capita	26.61	1.53	3.87	0.19	1.66	1.76	0.02
	Per cent of total		5.7	14.5	0.7	6.2	6.6	0.1
168	Woonsocket, R. I	1,484,263	116,970	419,899	13,366	84,144	321,398	78,294
	Per capita	29.05	2.29	8.22	0.26	1.65	6.29	1.53
	Per cent of total		7.9	28.3	0.9	5.7	21.7	5.3
169	New Castle, Pa	1,201,751	75,522	162,262	9,560	64,526	88,664	19,200
	Per capita	23.70	1.49	3.20	0.19	1.27	1.75	0.38
	Per cent of total		6.3	13.5	0.8	5.4	7.4	1.6

[1] Populations, State Census, 1925. [2] Less than one-half of 1 cent. [3] Less than one-twentieth of 1 per cent.

The Census Bureau's Classification

showing the various municipal activities and services included under the various classifications in the foregoing table will be found in THE MUNICIPAL INDEX for 1927, page 104. Averages of total, per capita, and percentage expenditures for the main subdivisions of governmental-cost payments of the five groups of cities are given on page 97 of the same volume.

For a comparison of statistics of any given city with those of the fiscal year 1925, see THE MUNICIPAL INDEX for 1927, pages 98-103, and THE AMERICAN CITY for March and April, 1927, pages 352-357 and 516-521 respectively.

GOVERNMENTAL-COST PAYMENTS, CONTINUED

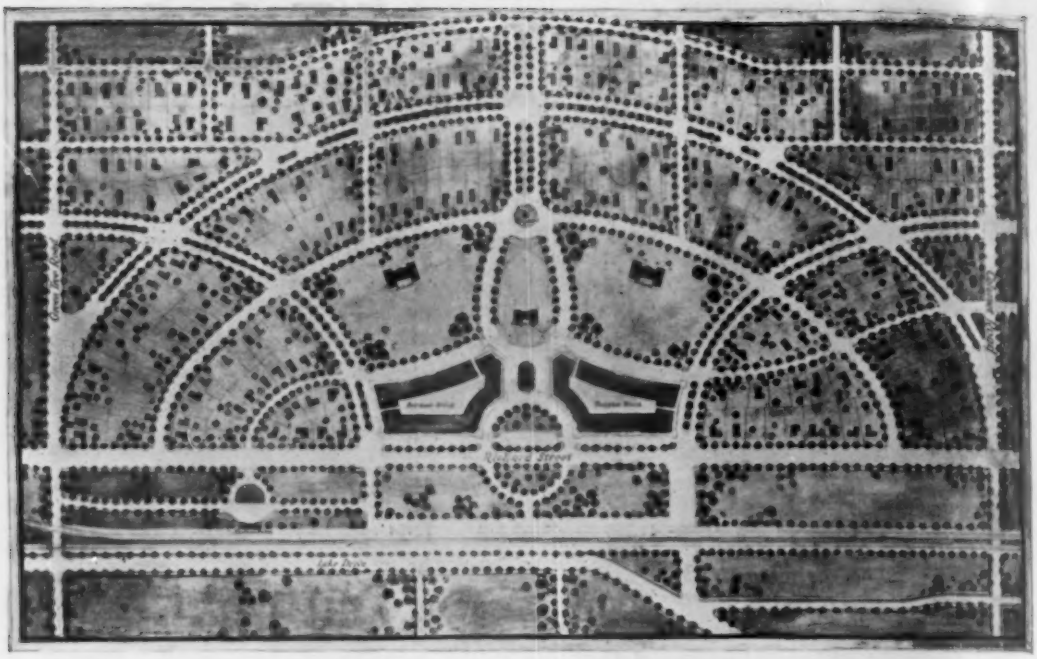
Schools	Libraries	Recreation	Miscellaneous	Net Debt Total	Net Debt Per Capita	Per Capita Assessed Valuation for City Government	Per Capita Levy for All Purposes	Per Capita Levy for Government of City	Estimated Population
$1,135,864	$61,412	$22,823	$74,862	$7,440,900	$125.06	$2,388.86	$54.94	$46.25	59,500
19.09	1.03	0.38	1.26						
56.4	3.0	1.1	3.7						
734,446	13,645	62,084	22,061	2,195,269	36.90	1,481.18	46.95	36.53	59,500
12.34	0.23	1.04	0.37						
51.2	1.0	4.3	1.5						
1,185,691	.....	90,502	61,593	3,332,370	56.10	780.80	41.75	26.83	59,400
19.96	....	1.52	1.04						
51.1	....	3.9	2.7						
399,119	7,430	40,481	14,198	2,497,180	42.18	871.20	31.74	19.23	59,200
6.74	0.13	0.68	0.24						
32.5	0.6	3.3	1.2						
395,627	9,370	44,615	3,389	7,292,491	[b]	[b]	[b]	[b]	[c]
[b]	[b]	[b]	[b]						
49.5	1.2	5.6	0.4						
379,203	12,561	23,190	40,640	3,139,441	53.67	788.71	27.10	19.72	58,500
0.48	0.21	0.40	0.69						
33.5	1.1	2.1	3.6						
1,157,348	22,128	66,465	101,672	11,240,899	192.81	2,137.36	59.50	47.77	58,300
19.85	0.38	1.14	1.74						
47.0	0.9	2.7	4.1						
1,638,401	84,907	258,615	127,688	11,032,587	191.87	2,533.16	81.75	60.88	57,500
28.49	1.48	4.50	2.22						
47.5	2.5	7.5	3.7						
560,727	4,500	13,016	34,731	2,744,363	48.06	675.22	22.75	19.24	57,100
9.82	0.08	0.23	0.61						
52.5	0.4	1.2	3.2						
846,733	15,978	67,795	17,385	4,021,346	71.54	2,121.38	55.91	42.33	2o6,208
15.06	0.28	1.21	0.31						
50.9	1.0	4.1	1.0						
508,654	300	15,786	44,347	3,364,661	60.41	927.99	35.65	25.73	55,700
9.13	0.01	0.28	0.80						
35.7	....	1.1	3.1						
1,169,670	65,077	179,175	132,173	4,142,102	75.72	2,417.38	67.69	61.43	54,700
21.38	1.19	3.28	2.42						
36.8	2.0	5.6	4.2						
846,209	38,754	39,009	30,130	2,802,223	51.42	1,382.03	44.96	32.95	54,500
15.53	0.71	0.72	0.55						
54.6	2.5	2.5	1.9						
732,769	32,842	26,566	20,046	2,384,113	43.99	356.83	35.40	27.44	54,200
13.52	0.61	0.49	0.37						
61.9	2.8	2.2	1.7						
573,211	14,774	4,326	18,706	7,236,747	134.51	2,149.16	45.56	24.93	53,800
10.65	0.27	0.08	0.35						
42.7	1.1	0.3	1.4						
1,501,586	55,452	273,414	205,266	17,698,613	328.97	5,616.75	138.47	96.68	53,800
27.91	1.03	5.08	3.82						
30.5	1.1	5.6	4.2						
987,991	23,122	62,203	18,035	2,667,016	49.85	389.15	49.07	39.89	53,500
18.47	0.43	1.16	0.34						
60.2	1.4	3.8	1.1						
794,657	39,254	67,728	34,476	3,203,100	60.78	1,358.52	38.65	31.08	52,700
15.08	0.74	1.29	0.65						
49.0	2.4	4.2	2.1						
838,379	39,050	99,515	33,799	2,685,079	51.17	947.29	49.95	37.31	[a]52,469
15.98	0.74	1.90	0.64						
51.6	2.4	6.1	2.1						
680,047	36,165	96,979	140,014	2,340,448	44.67	1,197.95	37.62	34.03	52,400
12.98	0.69	1.85	2.67						
37.0	2.0	5.3	7.6						
1,007,504	37,116	47,703	18,023	2,443,864	46.73	1,553.30	48.07	37.90	52,300
19.26	0.71	0.91	0.34						
57.5	2.1	2.7	1.0						
1,203,979	44,650	38,594	138,983	9,424,228	181.58	2,497.90	67.76	57.37	51,900
23.20	0.86	0.74	2.68						
46.0	1.7	1.5	5.3						
408,407	4,704	24,542	8,579	5,077,757	98.41	995.47	34.14	21.90	51,600
7.91	0.09	0.48	0.17						
43.2	0.5	2.6	0.9						
834,918	23,274	34,865	8,574	3,399,383	66.26	421.29	41.11	32.83	51,300
16.28	0.45	0.68	0.17						
61.2	1.7	2.6	0.6						
394,141	7,728	21,024	27,299	7,010,293	137.19	1,700.43	40.73	38.69	51,100
7.71	0.15	0.41	0.53						
26.6	0.5	1.4	1.8						
714,865	15,223	4,589	47,340	2,483,112	48.98	1,084.95	31.08	24.68	50,700
14.10	0.30	0.09	0.93						
59.5	1.3	0.4	3.9						

[a] Population Jan. 1, 1920. [b] Per capita not computed; population not estimated. [c] Population not estimated.

Large Cities Can Help the Smaller Ones

by systematizing their accounting methods and by more effective cooperation with the Bureau of the Census, thus reducing the cost of compiling their financial statistics and making possible an extension of the Bureau's reports to cover cities of less than 30,000 population.

On this subject, see Director Steuart's appeal to readers of THE AMERICAN CITY, on page 493.



PLAN OF CIVIC CENTER, FOX POINT, WIS.

Training Up a Village in the Way It Should Grow

By P. W. Koeppen

AFTER reading the histories of civic center projects in other cities involving referendums, elections, politics of all kinds, condemnations and high-tax speeches, it is particularly refreshing to stumble on a community which is definitely planning on a big population and, while still a village, is laying its city planning foundations with a long look ahead.

It is comparatively easy to build a "model city" when all of the property is owned by one company, as in the case of Kohler* and other similar communities. Examples of several hundred people working together planning for the city of the future when it is still in the "teething" stage, are rare. The plans perfected and put into execution by the village of Fox Point, Wis., prove that it can be done.

Until a few years ago, Fox Point was a fashionable summer colony for wealthy Milwaukeeans. On the land along the shores of Lake Michigan, ten miles outside of Milwaukee, palatial country homes were built. Land not along the lake shore was considered almost valueless. As Milwaukee grew, the population moved northward. Soon the Fox Point land away from the lake acquired value. Realty concerns snapped it up and platted it.

When the Fox Point population passed the 350 mark, property owners felt that they should unite for mutual protection. They wanted to escape the fate of many other subdivisions whose properties have dropped in value through annexation of undesirable industries or through the entrance of undesirable neighbors. They incorporated as a village.

Retaining City Planning Consultants

The next step was to form definite plans for the city of the future. They appointed a City Planning Commission and retained a skilled city planning engineer to work with that body. Gardner S. Rogers, formerly city planning engineer for the city of Milwaukee, was chosen. Mr. Rogers submitted the preliminary thoroughfare plans, and worked out the zoning ordinance and a platting guide. His suggestions

* See THE AMERICAN CITY for May, 1927, pages 669-671.

were carried out in detail by Charles S. Whitney, a Milwaukee consulting engineer. In addition, Mr. Whitney prepared plans for sanitary and storm sewers, street grades, and other engineering problems connected with the building of a model city.

The long, narrow strip of land overlooking Lake Michigan known as the village of Fox Point includes approximately 1,300 acres. Approximately three times this area is available for annexation. The civic center will cover 200 acres. Included in the civic center are the village hall, the business district, two schools and a parklike residence district.

During the preparation of plans the City Planning Commission faced a number of problems which made it seem as if the end would be hard to attain. The first of these was the problem of railroad tracks which run through the center of the village. A main street through the village was necessary. Should this street be adjacent to or at some distance from the railroad tracks? Mr. Whitney recommended that the new street be built parallel to the tracks, but 215 feet from the right-of-way. This would make it possible at a later time, when demanded by increased traffic, to separate the grade crossings at the points of intersection.

With the main street located, and two highways ¾ of a mile apart serving the major amount of traffic, carefully located curvilinear streets provide easy and attractive access to the residential sections.

Curving Streets and Cooperating Property Owners

The curving of the streets to fit the topography brought the usual problems of irregular-shaped lots and divided ownership. This problem, which has proved so serious in many communities, was solved by the cooperation of the property owners, who traded one parcel of land for another until each owner received his fair share of the newly subdivided areas.

The solution of the road problem crystallized the plans for a civic center. This is to be in the center of the village on the new main street. A boulevard 160 feet wide leads from the civic center west to the Milwaukee River and the County Parkway. Two blocks will be devoted to the business interests of the city. Richard Street, the new main street, will be 210 feet wide in the business section of the town. Provision has been made for diagonal parking in the center of the street, thus solving one of the most perplexing problems of the business man —"Where shall the customer put his car?"

"We do not intend," said Mr. Whitney, "that the stores shall be equidistant from the edge of the sidewalk. According to the plans which we have prepared, some of the shops will be set back farther than others. In the case of a tea room, for instance, it may be to the advantage of the owner to set back farther from the street.

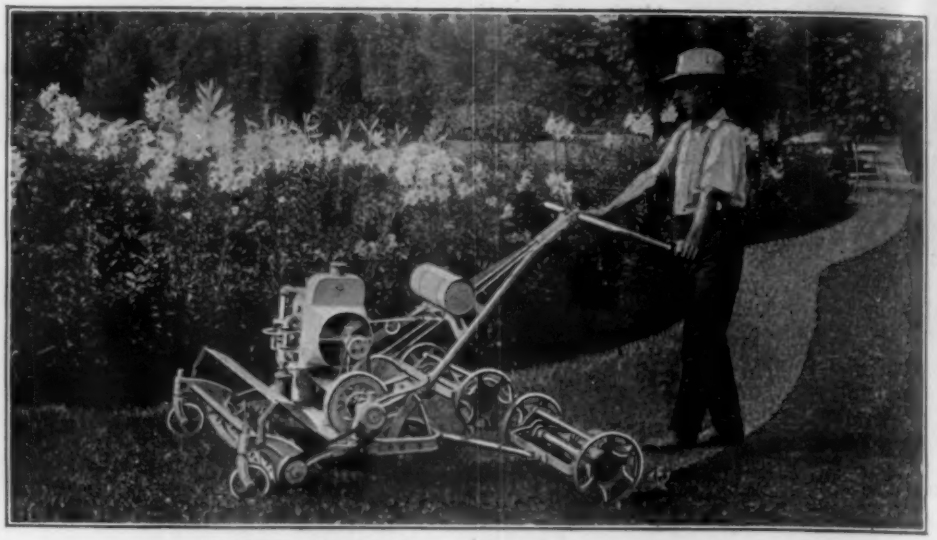
"It is impossible, of course, to legislate restrictions on buildings so that they will conform to our plans. We are solving the problem, however, through the cooperation of the property owners. Owners of property in the business district deeded it to the village. The village incorporated into the deed of the property all the restrictions placed on the property, including a sketch of the type of building which shall be built upon it. Then the village deeded the property back to its original owners. Anyone buying property in the business district knows just what type of building must be built upon that plot of ground before he buys it."

The plans for the civic center include also the sites for two schools and a village hall. The schools will be built when found necessary.

A Unique Zoning Ordinance

One of the most difficult parts of the city plan was the preparation of the zoning ordinance. The village at the present time is not served with sanitary sewers. The Metropolitan Sewage Commission, having jurisdiction over the sewage in this section of the county, ruled that no sewage may be deposited in the streams. The State Board of Health ruled that each resident must dispose of all his sewage upon his own land. In several instances building construction was stopped by the Board of Health because the lot was not sufficiently large to permit of completely disposing of the sewage of the single house thereon. A study of the situation revealed that in certain sections (because of the relatively impervious nature of the soil) an acre of ground was necessary to completely dispose of the sewage of a single dwelling. In another section 15,000 square feet was necessary and in a third section 7,500 square feet was required.

The zoning ordinance was therefore prepared in accordance with these conditions. In the "A" residential district 40,000 square feet of open space is required. For the "B" residential area 15,000 square feet is required, and 7,500 for the "C" residential area. As a dwelling would cover but a small percentage of the lot when provided with 40,000 square feet of open space about it, no hardship was inflicted in requiring a 20-foot side yard on each side of the dwelling. The ordinance further states that at such time as the village is sewered either in part or in whole the zoning ordinance affecting that part shall be restudied



Model "L", shown above, mows and rolls 4 to 6 acres a day. With gang units attached it cuts 10 acres a day on one gallon of gasoline.

Why Coldwells remain supreme

The long sustained leadership of Coldwell Lawn Mowers is based firmly and solidly on one thing—*absolute dependability.*

Constructional integrity, advanced engineering features, efficiency of operation, and trouble-free service—all contribute definitely to Coldwell reputation. But underlying these is Coldwell *dependability.* This is the factor which, for over 60 years, has kept Coldwell Lawn Mowers supreme in their field, and the largest-selling lawn mowers in the world.

Literature describing in detail Coldwell Lawn Mowers will be gladly sent on request. Please specify the type of machine in which you are interested.

HAND — HORSE

SINCE 1867

COLDWELL

DEPENDABLE LAWN MOWERS

GASOLINE — ELECTRIC

COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.

Mention THE AMERICAN CITY—it helps.

SKETCH OF BUSINESS BLOCK FOR CIVIC CENTER, FOX POINT, WIS.

PLAN OF THE SAME BLOCK SHOWING SETBACKS OF BUILDING LINES, AND ARCADE TREATMENT AT RIGHT

with a view to making it conform to the existing sanitary conditions. These provisions also make it possible, if the citizens so desire, to resubdivide the property if the open area requirements of the ordinance are reduced. It is not expected, however, that this will take place, as practically all of the "A" and "B" residential areas are owned by persons who either have built or expect to build elaborate homes on the sites. Thus the zoning ordinance materially assists in the upbuilding of the high-grade neighborhood and yet adheres to the fundamental principles of all zoning, namely, for health, morals and the general welfare.

The village, by employing the services of a skilled city planning engineer and an experienced consulting engineer to advise and assist in the work of the city planning commission, is insuring itself against "growing pains." Property owners, as a result of their cooperation with the Commission, have greatly increased the value of their property. Their plans appear to be developing that rarity—a model city.

Over 55 Per Cent of Urban Population Live in Zoned Areas

THE 553 zoned municipalities in the United States contains more than 30,000,000 people, or more than 55 per cent of the urban population, according to figures as of July 1, 1927, just made public by John M. Gries, Chief, Division of Building and Housing, Department of Commerce. Details of the survey upon which this report is based, show that 52 of the 553 zoned municipalities have over 100,000 population; 46 have from 50,000 to 100,000; 75 have from 25,000 to 50,000; 96 have from 10,000 to 25,000; 97 have from 5,000 to 10,000; 138 have from 1,000 to 5,000; and 49 have less than 1,000 population.

The enactment of a comprehensive zoning ordinance in New York City in 1916 was practically the beginning of this movement which has spread so remarkably during the past eleven years, though Boston as early as 1904 took measures for the legal regulation of building heights, and Los Angeles adopted use zoning regulations in 1909.

MUNICIPAL APPRAISAL SERVICE

The Manufacturers' Appraisal Company, in addition to its large industrial-plant appraisal business, serves Cities, Counties, States, Boards of Education and other governmental units requiring professional valuation services.

We are prepared to furnish competent specialists for any municipal requirement, and particularly for these services:

1. *Detailed or condensed appraisals* of buildings, machinery and furnishings of publicly owned institutions, such as city halls, police and fire stations, libraries, hospitals, schools and penal and charitable institutions. Such appraisals are used as a basis for determining insurance coverage; proof of fire loss; determining fair book values of publicly owned assets; checking against contractors' charges, etc.
2. *Tax assessment service* for revaluation of real estate for equalization of the tax burden. We have satisfactorily served about 75 American cities by assisting taxation officials in arriving at fair, equalized assessment valuations.
3. *Appraisal of public utility properties* for determination of fair service rates; also representation of municipalities in appeals of public utility corporations from local assessment valuations.

Inquiry at any of our offices will receive prompt attention. Write for free literature: (a) "Scientific Real Estate Assessments by Somers System Methods," (b) prospectus of our book, "The Science and Practice of Urban Land Valuation."

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The Manufacturers' Appraisal Company
Established 1899
WALTER W. POLLOCK, *President*

District Offices:
Detroit
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Yes—we should like you to mention THE AMERICAN CITY.

Road Builders Promote Highway Safety

THE American Road Builders' Association, which during its existence of 24 years has been an important factor in the promotion of more and better highways, has turned its attention also to the making of the highways more safe for motorists and pedestrians. In a statement released for October publication, the Association's director, Charles M. Upham, estimates that, during the five years ending December 31, 1926, the staggering total of 3,446,370 persons were injured and 114,879 killed in traffic calamities, most of which were avoidable. The yearly record follows:*

Year	Killed	Injured
1922	19,203	576,090
1923	22,621	678,630
1924	23,291	698,730
1925	24,462	733,860
1926	25,302	759,060
5-year toll	114,879	3,446,370

Stressing the importance of the psychological factors in highway safety, and the need for a thoroughly organized campaign of public education, Mr. Upham summarizes as follows the ultimate objectives of the general movement for highway safety:

"*First*, the education and regulation of pedestrian traffic as well as motor-vehicle traffic. Pedestrians and motorists are to be considerate of each other and share the necessary delay caused by courteous and cautious conduct. Along rural highways where there are sidewalks, pedestrians will be expected to use them. Where sidewalks are unavailable, pedestrians will be expected to use the extreme left side of the road facing the traffic flow. In cities, pedestrians are to be instructed, urged and even required to keep within the boundaries of designated safety zones and crossing places, and where there is congestion to cross only with the traffic. Pedestrians as well as drivers are to be subject to the traffic regulations, the violation of which would be considered a misdemeanor.

"*Second*, the adoption of a standard code of motor-vehicle laws in every state of the Union. This is expected to reduce accidents resulting from ignorance of regulation and custom. A code has been drawn up by the Hoover Conference as a model for state adoption. The code should include a thorough examination of all drivers.

"*Third*, education in safety and accident prevention, as the American Road Builders' Association recommends, will be incorporated in the curricula of elementary schools, both public and private, parochial schools, night schools, vocational schools and citizenship schools. It will also be carried on through educational contests, organized playground training, schoolboy patrols, Boy and Girl Scouts, and junior safety organizations. More advanced training in safety and traffic matters will be developed in schools for teachers. General education of the public will be undertaken through newspaper and magazine publicity, posters, motion pictures, radio lectures, safety clubs, safety programs at public meetings, churches and parent-teacher organizations. A pledge card binding the signer to the use of courtesy and caution will also be issued by the Association to all drivers and pedestrians willing to cooperate in the movement.

"*Fourth*, motorists will be asked to protect the design and materials of their automobiles by periodic adjustment and replacement. Particular emphasis will be put on the construction and adjustment of headlights, steering apparatus and brake mechanism.

"*Fifth*, a comprehensive program of street widening and the elimination of grade crossings will be carried out throughout the nation. Grade-crossing accidents account for approximately 9 per cent of the total highway traffic deaths. The railroad hazard is rapidly decreasing, however, as the result of installation of signals and gates, reduction in the number of crossings, and safety legislation."

Highway Safety Club

The October campaign of the American Road Builders' Association will be focused around a highway safety pledge card, which will be distributed through the schools, churches, newspapers, magazines and various other agencies. This card binds the signer to the practice of reasonable courtesy and caution in his conduct while on the street or highway. In return for his expression of willingness to cooperate in the highway safety move-

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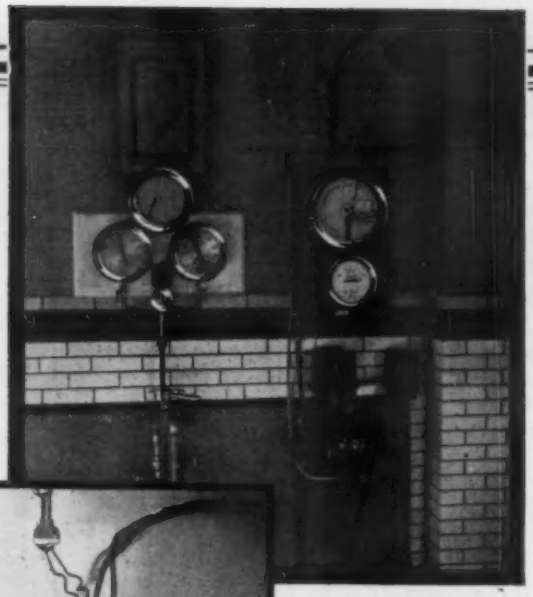
EDITORIAL NOTES.—Realizing the impossibility of gathering complete and authentic statistics on traffic accidents, and the confusion in the public mind which results from the quoting by various organizations of conflicting figures, THE AMERICAN CITY has asked two other leading organizations as to how their estimates agree with those of the American Road Builders' Association. In reply, C. W. Stark, of the National Conference on Street and Highway Safety, writes:

"The figures for those killed in highway accidents in the table for 1922, 1923 and 1924 agree with the *estimated* fatalities reported by the Committee on Statistics of the National Conference on Street and Highway Safety in its 1926 report. I have been unable to verify the figures for 1925 and 1926, but my impression is that they are as nearly correct as can be obtained.

"With respect to the non-fatal injuries, the Committee on Statistics in its first report, in 1924, finding a wide range in different states and cities in ratio between non-fatal and fatal injuries, and having no better basis to use in view of the considerable number of non-fatal accidents not reported, used an arbitrary average ratio of 30 to 1. In its 1926 report it reduced this ratio to 25 to 1 on the basis of later returns, and thereby showed an apparent reduction in non-fatal injuries despite considerable increase in fatal accidents. The table of the American Road Builders' Association, however, I note, has simply applied the 30 to 1 ratio throughout."

Carrol E. Robb, of the Public Safety Division, National Safety Council, calls attention also to the difference between the 30 to 1 and 25 to 1 ratios and says:

"The 1926 fatality figures are probably approximately correct as nearly as we are able to estimate. You will understand that these figures for the five years include not only automobile accidents, but also accidents in which automobiles were not involved in any way. They are street and highway accidents, including railroad grade-crossing accidents, street-car accidents, automobile accidents, motorcycle accidents, and injuries by other vehicles."



Water Meter on line of filter beds, Evansville Water Works, Evansville, Indiana

Meter body located underground outside the building, Evansville Water Works

In A Filtration Plant

IN filtration plants Republic Water Meters are used to measure the water passing through the filter beds. Thus the operator has a check on the amount of water filtered and a record of operation, giving exactly the time and amount of water used.

The Republic method of electrically measuring flow gives a flexibility of installation. That is, the reading instruments are placed any desired distance from the points of measurement. Many times, they are located in the engineer's office, where he can watch his pumping conditions at all times.

Variation of voltage in current supply does not affect the readings, owing to a patented feature developed exclusively for the Republic Flow Meter.

The oil seal absolutely prevents scale, dirt, oxide, boiler compound or other matter from entering the meter body.

Republic Flow Meters have the well-known accuracy of electrical instruments. The orifice will not wear and scale cannot accumulate on the thin edge; thus accuracy is maintained.

Bulletin "Republic Water Meters" sent on request

Republic Flow Meters Co.

2226 Diversey Pkwy. **Chicago, Illinois**

Yes—we should like you to mention THE AMERICAN CITY.

ment the signer of this pledge will be furnished without charge a membership card in the Highway Safety Club. The Highway Safety Club is to consist of all who have expressed their willingness to do some little thing each day to remove the hazards of the public street and highway. The Association believes that the members of this Club may be used in the future to promote the cause of highway safety.

A copy of the pledge form for the Highway Safety Club and further information regarding this important movement are obtainable from the American Road Builders' Association, Earle Building, Washington, D. C.

The Arlington Memorial Bridge

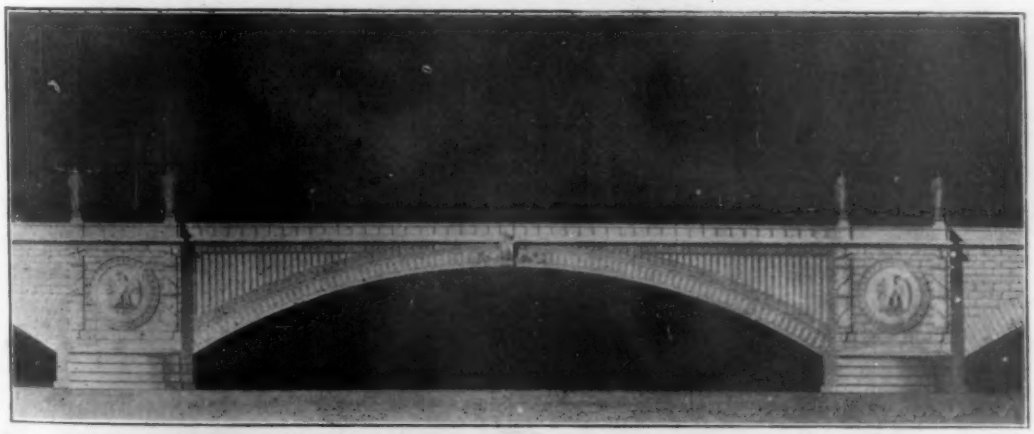
THE Arlington Memorial Bridge across the Potomac River, now under construction, will join the city of Washington with the Arlington National Cemetery, which contains the tomb of the Unknown Soldier, the historic Custis Mansion, once the home of General Robert E. Lee, and the graves of many of the nation's heroic dead. As a memorial it will not only form a fitting approach to the Cemetery, but will also symbolize the firmly established union of the North and the South, while as a bridge it will add greatly to the facilities for travel from Washington to the South.

The bridge is to be constructed generally of reinforced concrete with white granite facing, and will have nine arches, varying in span from 166 feet at the ends to 184 feet in the center. The total length will be 2,138 feet. The central span will be a double-leaf steel bascule draw-span as shown below. The roadway will be 60 feet wide, with a 15-foot sidewalk on either side.

The bridge will end at Columbia Island, containing about 122 acres, built up by the spoil from dredging and to be developed as a park. The main roadway will cross to the Virginia shore over a secondary bridge, and then proceed up a gentle slope to the foot of the hill beneath the Curtis Mansion, where a memorial entrance to the Arlington National Cemetery will be constructed. A second bridge will connect with the Lee Highway, and the proposed Mount Vernon Boulevard will probably reach the Virginia shore by a similar bridge.

The estimated cost of the entire project is $14,750,000, of which about one-half represents the cost of the bridge proper. Active construction work on the bridge was started in March, 1926, and the piers and abutments are practically completed. A contract for the construction of the superstructure will be let in the near future, and it is expected that the bridge proper will be ready for use early in 1930, and that the entire project will be completed by 1935.

The work of construction is being carried out by a commission consisting of the President of the United States, the Vice-President, the Speaker of the House of Representatives, and the Chairmen of the Committees on Public Buildings and Grounds of the Senate and of the House of Representatives. Lt. Col. U. S. Grant, 3rd, is Executive and Disbursing Officer of the Commission; McKim, Mead & White are the architects, and W. J. Douglas is consulting engineer.



ARCHITECTS' DRAWING SHOWING PROPOSED ELEVATION OF THE BASCULE DRAW-SPAN OF THE ARLINGTON MEMORIAL BRIDGE

The steel trusses are to be hidden by ornamental metal having the same lines as the adjacent masonry arches. This metal will be painted a light color to match the granite facing of the rest of the bridge, so that the entire bridge will have a uniform and harmonious appearance when seen from a distance

Conduct *Your* Elections in the Modern Way

Voting Machines have supplanted the paper ballot in 1,800 cities and towns—They pay for themselves in savings.

Modern method of voting—simple, quick, accurate

ENLIGHTENED election officials all over the United States are installing voting machines for use at all elections. They insure absolute accuracy in the count. They prevent spoiled ballots—even an illiterate cannot invalidate his ballot. They give the voter complete secrecy, enable election results to be made public immediately and provide a permanent record of the vote.

The cost is absorbed in savings made possible by their use. In many cities and counties expenses have been so reduced that the machines *paid for themselves* in five years.

Your community, too, can enjoy the advantages of voting machines without their actually costing you anything.

Write today for illustrated folders which describe the machine and tell how it reduces election expenses.

AUTOMATIC REGISTERING MACHINE CO., INC.
JAMESTOWN NEW YORK

Carrier Currents and Vacuum-Tube Transmitter Control City's Street Lighting

A SYSTEM of carrier-current control of all street lights, with the utilization of a long-wave, low-powered vacuum-tube transmitter, similar in many respects to the familiar radio transmitter, was inaugurated in Glens Falls, N. Y., in September, marking the first commercial application of the system The transmitter is operated for only fifteen seconds daily—five seconds for turning on the lights and ten seconds for turning them off. The radio or electro-magnetic waves instead of spreading out in all directions as do radio waves from antennae, as ordinarily used for communication purposes, follow along the wires running to receiving stations. There switches are tripped, relays operated, and the lights controlled.

This system, as developed by engineers of the General Electric Co., was installed in Glens Falls by the Adirondack Power & Light Corporation, and replaces the time-clock method of lamp control. Feed wires lead to five different sections into which the entire system of 1,000 lamps is divided, with each section independent. A small panel board in the power-house contains all the transmitter apparatus, consisting of two 50-watt tubes and a simple oscillator circuit. On the board are "off" and "on" buttons. Turning the "on" button puts the receiver into the circuit for five seconds. The high-frequency waves follow the feeder wire to each of the five receiving stations, one receiver to each unit of the system. The receiver controls the relay circuits to start the flow of the lighting current. At daybreak the operator turns the "off" button and the carrier waves again pass over the feeder wires, are picked up at the receivers, and operate the relays that turn off the lights.

The successful application of carrier-current communication to power circuits suggested the possibility of applying similar methods for the remote control of apparatus. One of the problems most actively attacked has been that of remote control of street-lighting circuits. The advantages of carrier-current control are stated to be as follows, in brief:

Existing circuits are used for transmission of control energy.

The usual distribution of power is not affected in any way.

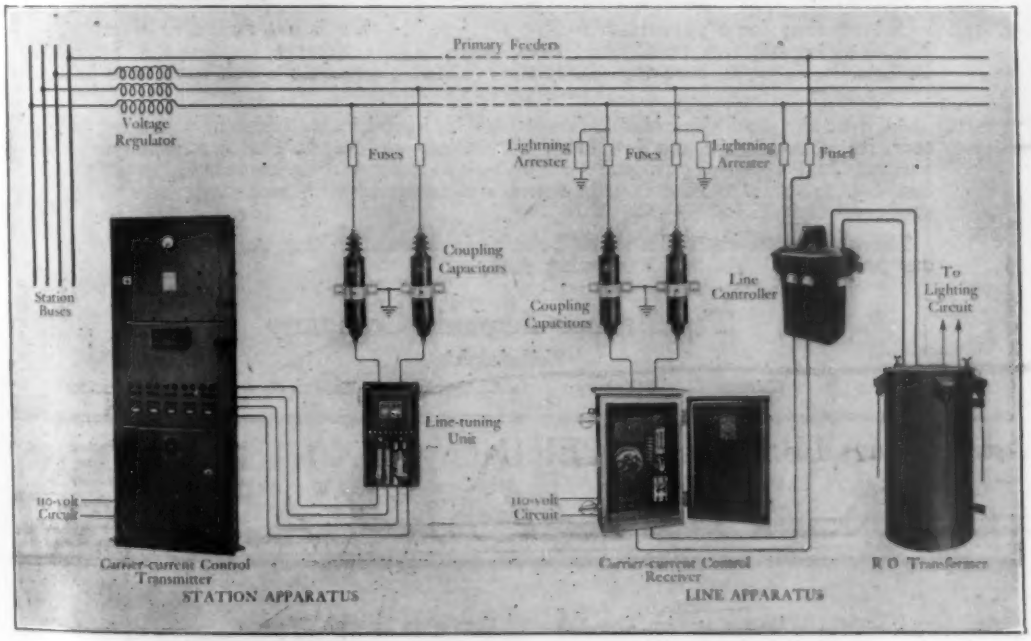
Interference with telephone and space radio is avoided.

The control is equally applicable to grounded or ungrounded distribution systems.

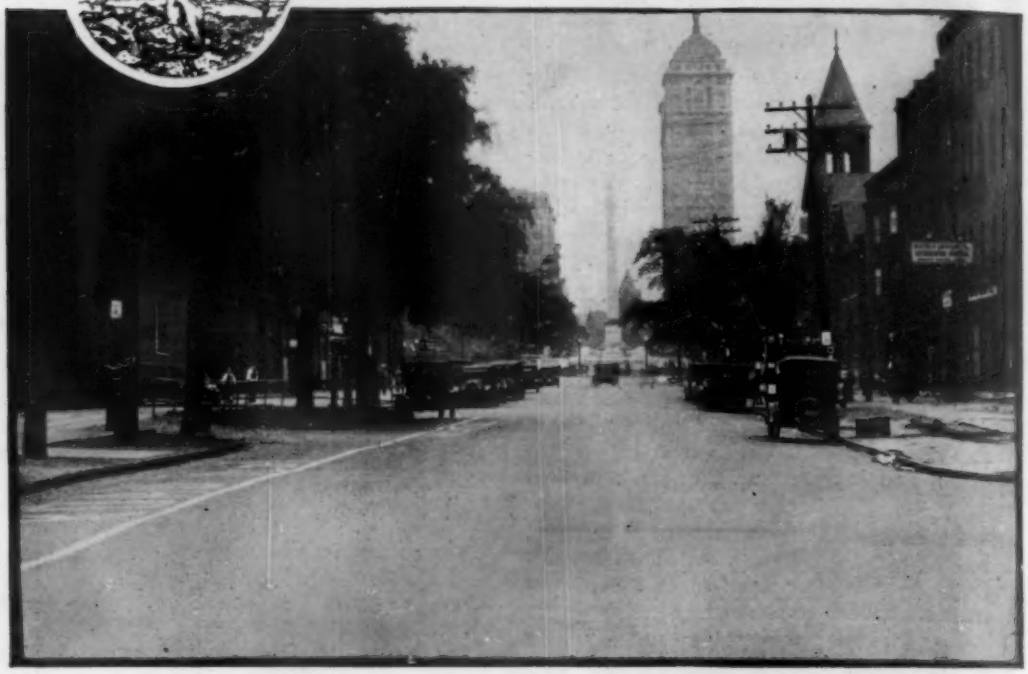
It is not operated by lightning, switching surges, or stray currents.

The "on" and "off" operations are distinctive, so that there can be no question as to the condition of the circuit at the remote point.

A temporary loss of power does not affect the condition of the controlled circuit.



From Trinidad Lake
to Buffalo, New York



37 years prove its long life!

A long time for a pavement to give service, but that is the record of Trinidad Native-Lake Asphalt on Court Street, from Upper Terrace to Seventh Street, Buffalo, N. Y.—and there are still other Trinidad pavements which have been laid even longer.

All over the world Trinidad is famous for its long life, its resistance to wear and tear, its immunity from all weather conditions—properties bestowed upon it by nature. And Trinidad pavements are noiseless, easy to keep clean and repair, and cost less for maintenance than pavements constructed with man-made artificially-produced asphalt.

The native-lake asphalt for *road* building is Bermudez Road Asphalt—another of our products. Write for interesting data.

The Barber Asphalt Company

Philadelphia

New York **Chicago** **Pittsburgh** **St. Louis** **Kansas City** **San Francisco**

TRINIDAD LAKE ASPHALT

Do you mention THE AMERICAN CITY when writing? Please do.

Adequate Street Lighting for Traffic Speed and Safety

ONE of the chief reasons for good illumination of city streets at night is the greater security of citizens against the criminal. With the continual increase in night traffic on the streets, this reason is becoming subordinate to the necessity for enough light to insure high-speed traffic with safety, according to A. F. Dickerson, chief engineer of the General Electric Co.'s illuminating engineering laboratory. He states that traffic counts on most of our radial arteries will show maximum peaks between 5:00 and 6:30 in the evening—hours of darkness or twilight in the winter. On many streets the average hourly night traffic to midnight exceeds that of daylight hours. More than half of the accidents on these streets occur after sundown. In a statement issued last month, on which this article is based, Mr. Dickerson says:

"Traffic control or regulation is designed to relieve congestion. During times of peak traffic, congestion is relieved principally by increasing average speed. By systems of progressive control, cars on main thoroughfares may maintain speeds higher than 25 miles an hour with safety in daylight. At night, unless sufficient lighting of the proper kind is supplied, drivers automatically decrease their speed below that for which the control system has been set, resulting in frequent stops with accompanying congestion. If an attempt is made to maintain the prescribed high speed on the poorly lighted street, frequent accidents will follow.

"In a recent count on one of the main traffic arteries of a city of 100,000 it was found that approximately 20,000 persons in automobiles passed a certain point during 24 hours. If traffic control will save five minutes in traversing this street, the daily saving would be over 1,600 man-hours. When the magnitude of this possible saving is realized, even though reduction in accidents is not considered, there can be no excuse for not installing a traffic control system."

As an illustration of the reduction of street accidents by good lighting, the 1923 statistics for four radial avenues in the eastern part of Cleveland, each with a double street-car track, showed one night fatality on Euclid and one on Woodland, both of which were well lighted, while there were eight on Superior and seven on St. Clair, where there was poor lighting. Daytime fatalities were greater on the first two avenues. More than two years ago Superior Avenue was brilliantly lighted with a system of 25,000-lumen lamps and since then there has not been a night fatality.

The quantity of light and the type of lighting to be used on a traffic artery will depend largely on local conditions, amount of traffic, tree interference, street surface, and many other factors. Such streets should be lighted to a sufficient degree to permit the operation of motor vehicles without bright headlights. Stating that the amount of light necessary will vary from a minimum of about 40 lumens per linear foot of street to a maximum of several hundred for the wide streets with heavy traffic, Mr. Dickerson gives the following general recommendations for good lighting of traffic arteries under average conditions:

Lighting Recommendations	Classification by Population		
	Over 100,000	30,000 to 100,000	Below 30,000
Lumens of lamp	6,000-10,000-15,000	6,000-10,000	6,000
Arrangement of standards	Staggered	Staggered	Staggered
Feet of street per standard	75-150	100-150	100-150
Lumens per linear foot	60-200	40-100	40-60
Height of upright unit	15-18 ft.	15-18 ft.	15-18 ft.
Height of pendent unit	20-25 ft.	20-25 ft.	20-25 ft.

Although considerable leeway is given in the above table, the author points out that deviations from it will often be advisable. For instance, very wide thoroughfares in large cities will probably demand an opposite arrangement of standards, instead of staggered, and in some cases the installation of two-light standards may be advisable. From a strictly utilitarian viewpoint, the system with pendent units is the more efficient. With the higher mounting heights, spacings can be materially increased and larger lamps used.

Highways beyond the city limits present a serious problem with regard to speed, safety and lighting. Because of the increased speed and the proximity of opposing traffic lanes with the resultant danger from headlight glare, serious accidents to the occupants of automobiles are more common proportionately on the highway than on the city street. Properly designed systems of illumination permit speed with more comfort to the driver and with greater safety for all.

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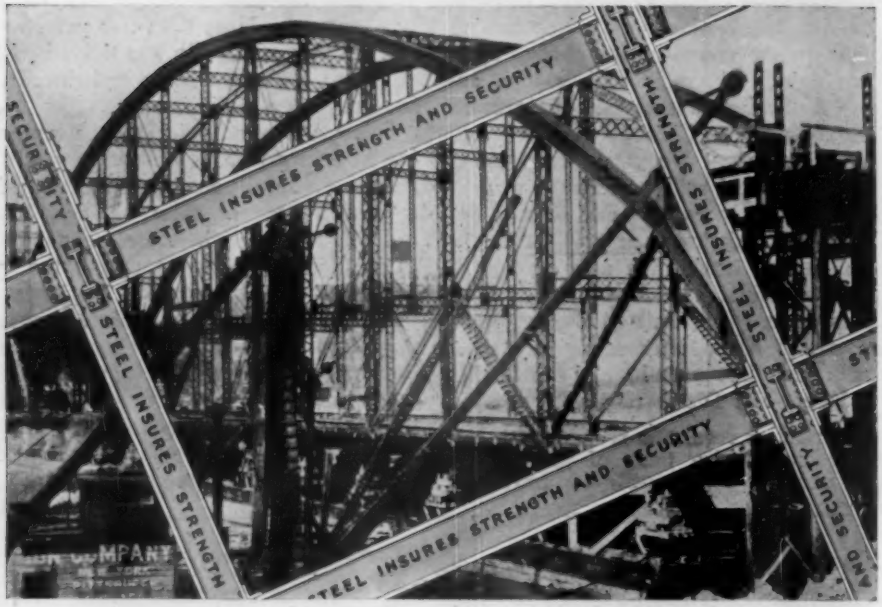
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Photo Courtesy "Construction News"

Removal of the south span of the Sixth Street Bridge, Pittsburgh, Pa. After many years' service the bridge was in such good condition that it could be removed safely for re-erection. The span has been lowered and placed on pontoons ready for floating downstream. The removal of this 440-foot truss span intact is an amazing tribute to the flexibility of structural steel.

The American Institute of Steel Construction has cleared up a dozen problems which have vexed specification writers for years. The Institute's data on these problems will be found in the Institute's Code of Standard Practice.

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The Code supplements the Institute's Standard Specification, which is estimated to be saving more than $30,000,000 a year for owners and taxpayers. Send for the Code and Standard Specification and for the informative fact-book, "Steel Never Fails." We will mail both free of charge or obligation on your part.

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The co-operative non-profit service organization of the structural steel industry of the United States and Canada. Correspondence is invited. Address: 285 Madison Avenue, New York City.

The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

Municipal Corporations Can Compromise Disputed Claims

A municipal or other public corporation has the power to settle and compromise disputed claims in its favor or against it before or after suit has been begun thereon. This power is implied from the capacity to sue or to be sued. (Board of Commissioners of Orleans Levy District vs. Blythe, 113 Southern Reporter, 150, decided by the Louisiana Supreme Court.)

On the Closing of a Street, Title to the Land in the Bed of the Street Vests in Abutting Owners

The Kentucky Court of Appeals follows the prevailing holding by courts by deciding, in the case of People's Savings Bank & Trust Company vs. Board of Trustees of South Side Baptist Church, 294 South Western Reporter, 804, that where a street is closed by legal action, title to the soil automatically vests in the owners of the abutting property.

Four Burglars Did Not Constitute a "Mob" for Whose Misdeeds a City Would be Liable

Four men broke into a house in Kansas City, Kans., ransacked it, and beat a member of the household. She sued the city for damages, under the Kansas statute making cities liable for damages caused by mobs.

Reversing a decision of the trial court, the Supreme Court of the state holds in the case of Koska vs. Kansas City, 255 Pacific Reporter, 57, that the case did not come within the statute. The higher court declares that the statute was not intended to cover such crimes as this.

Ohio Counties Can Upon Consent Construct Bridges on Roads Through Cities

A board of county commissioners is authorized by the provisions of sections 2421, 6949, and 7557, Ohio General Code, to construct a bridge or viaduct as a part of a road improvement into, within, or through a municipality in such county upon the consent of the council thereof, and where no part of the expense of the improvement is assumed by the municipality the requirement of consent is fully met by the affirmative vote of a majority of the duly elected members of the council for the passage of an ordinance granting the consent. (Ohio Supreme Court, State vs. Blakemore, 157 Northeastern Reporter, 330.)

Municipality Operating Water Plant is Subject to an Ordinary Employer's Liability

"A city or town operating its plant to furnish water for the inhabitants thereof assumes the same responsibilities to its employees operating such plant who may be injured therein as private persons and private corporations running similar plants," declares the official syllabus of the opinion of the Oklahoma Supreme Court in the case of Town of Hallett vs. Stephens, 256 Pacific Reporter, 921.

The Court also holds that where an employee of such a plant is injured through negligence attributable to the municipality, his right to recover damages is not defeated by the fact that he was employed in violation of nepotism laws of the state. In this case the father of the injured employee was a member of the town board.

An Estimate Approved by a City Engineer is Valid Although Not Prepared by Him

The legality of a sewer construction contract awarded by a city of the fourth class in Missouri was unsuccessfully attacked by a taxpayer on the ground that the engineers who prepared the estimates on which the contract was awarded were not officials of the city. The Kansas City Court of Appeals said (Grant City vs. Salmon, 288 South Western Reporter, 88:)

"The evidence shows that, while the city engineer, in fact, did not make the estimates, he signed them and thereby made them officially his own."

A City is Not Liable to an Abutter for Closing a Street for Repairs, Nor for the Contractor's Negligence

Temporary closing of a street while it is being repaired or the grade changed, being a necessary incident to keeping the street in reasonable condition for travel, the city is not liable for the inconvenience thereby caused abutting property owners. The contractor engaged in such work may be individually liable to an abutter for damages resulting from negligent performance, but the city is not responsible. (Kentucky Court of Appeals in the case of Board of Councilmen of City of Frankfort vs. Brammell, 294 Southwestern Reporter, 1076.)

Laying Water-Mains Constituted a Local Improvement Sustaining Special Assessments

Water-mains were held to confer such particular benefit upon business and industrial districts as to support a special assessment of the benefited property, in the case of Village of Downers Grove vs. Bailey, 156 North Eastern Reporter, 362. The court observed:

"Whether or not an improvement is local or general depends upon the nature of the improvement and whether the substantial benefits to be derived are local or general in their nature. If its purpose and effect are to improve a locality, it is a local improvement, although there is incidental benefit to the public, but, if the primary purpose and effect are to benefit the public, it is not a local improvement although it may incidentally benefit property in a particular locality. . . . The fact that an improvement will be of advantage to the city does not change its character as a local improvement, if primarily of material advantage to the adjacent property, and, where the improvement enhances the value of adjacent property as distinguished from benefits diffused by it throughout the municipality, it is a local improvement."

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Chief Engineer, Newport Fire Dept., Newport, R. I.

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AMERICANS SHOULD PRODUCE THEIR OWN RUBBER . . Harvey S. Firestone

City Can Regulate But Not Prevent Operation of a Long-established Interstate Ferry

McNeely operated a ferry for twenty years across the Mississippi between Natchez, Miss., and Vidalia, La. He owned the lots abutting upon the river at the Vidalia landing, which extended on both sides of a street extending to the landing. The town of Vidalia terminated his license, granting an exclusive one to the city of Natchez and its assigns. That city assigned its rights to a company which instituted a new ferry, and the town of Vidalia assigned the entire landing to that company. Litigation followed, and on June 6, 1927, the United States Supreme Court handed down its decision in the case. (Mayor and Aldermen of the Town of Vidalia vs. McNeely.) This is the substance of that tribunal's conclusions reached in affirming a decree entered in McNeely's favor by a lower court:

Transportation of persons or property from one state to another constitutes interstate commerce subject to Congressional regulation. In the absence of such regulations, the states are left free to act with respect to ferriage from their shores, by fixing reasonable rates and providing measures to secure safety and convenience in the conduct of the business.

But the town exceeded its powers in this case when it undertook to exclude McNeely from the privilege of continuing his long-established business, and the lower court rightfully assigned landing places for both ferries—one on each side of the street above mentioned.

That McNeely owned the lots on both sides of the street at the river's edge gave him no superior rights, because under the Louisiana statutes the rights of such riparian owners are held subject to public use in connection with navigation.

Aliens May Be Forbidden by Ordinance to Operate Pool Rooms

An ordinance of the city of Cincinnati requires the licensing of pool and billiard rooms, and prohibits the issue of licenses to aliens. Upholding the validity of this ordinance, the United States Supreme Court said in the case of State of Ohio vs. Deckebach, 47 Supreme Court Reporter, 630:

"The objections to the constitutionality of the ordinance are not persuasive. Although the Fourteenth Amendment has been held to prohibit plainly irrational discrimination against aliens . . . it does not follow that alien race and allegiance may not bear in some instances such a relation to a legitimate object of legislation as to be made the basis of a permitted classification. . . .

"The admitted allegations of the answer set up the harmful and vicious tendencies of public billiard and pool rooms, of which this Court took judicial notice in Murphy v. California, 225 U. S. 623, 32 S. Ct. 697, 56 L. Ed. 1229, 41 L.R.A. (N.S.) 153. The regulation or even prohibition of the business is not forbidden. . . . The present regulation presupposes that aliens in Cincinnati are not as well qualified as citizens to engage in this business. It is not necessary that we be satisfied that this premise is well founded in experience. We cannot say that the City Council gave unreasonable weight to the view admitted by the pleadings that the associations, experiences and interests of members of the class disqualified the class as a whole from conducting a business of dangerous tendencies.

"It is enough for present purposes that the ordinance, in the light of facts admitted or generally assumed, does not preclude the possibility of a rational basis for the legislative judgment and that we have no such knowledge of local conditions as would enable us to say that it is clearly wrong."

Consideration of a Statute Creating a Crime Applying to Motor Homicides Less Culpable Than Manslaughter

A Michigan law, enacted in 1921, makes one guilty of "negligent homicide" who carelessly, but not wantonly or wilfully, causes death while operating a vehicle at immoderate speed. The act provides that a finding of fact as to whether a given speed was negligent shall not depend upon the rate of speed fixed by law for operating vehicles.

This statute was closely considered by the Michigan Supreme Court in the case of People vs. Campbell, 212 North Western Reporter, 97. In that case five of the eight judges of that Court agreed that Campbell was entitled to a new trial, after a conviction under this statute.

The Court holds slight negligence on the part of the driver of a motor vehicle will not sustain a conviction under this statute; but that failure to use reasonable precaution for the safety of others in a highway does constitute a violation of the statute, assuming that the carelessness be less than gross negligence. If the negligence be gross, then, of course, a more serious crime—manslaughter—is committed.

The Court granted a new trial to Campbell, who accidentally killed two pedestrians in a highway after dark, on the ground that the trial judge's instructions to the jury did not properly state the law, in that they precluded the jury from considering whether or not carelessness on the part of the pedestrians contributed to the accident.

Massachusetts Initiates Important Law Governing Motor-Vehicle Accidents Caused by Non-Resident Drivers

A Massachusetts statute in substance provides that a non-resident of the state by driving upon its highways impliedly assents that he may be sued there on account of an accident occurring on a Massachusetts highway, and that summons may be served on the state registrar of motor vehicles in Massachusetts as his agent.

The validity of this law was attacked before the United States Supreme Court in the case of Hess vs. Pawloski, decided May 16, 1927, on the ground that is violated the constitutional guaranty of due process of law. But the Court holds that the statute is valid, especially since it does not apply to suits on matters arising outside of the state, and since it provides for service of a copy of the summons on the non-resident and provides for giving him reasonable opportunity to appear and defend.

The obvious object of the law is to afford residents of Massachusetts a chance to sue negligent drivers in the courts of that state, rather than to necessitate pursuit of them into the states where they live.

By the holding that a non-resident impliedly assents that process may be served on the Massachusetts registrar as his agent, it is not to be inferred that it is essential that a non-resident be aware of the existence of the statute while driving in the state.

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Zoning Notes

Prepared by Frank B. Williams

Author of "The Law of City Planning and Zoning"

From data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Statutes and Ordinances

NEWTON, IOWA.—Ordinance, August, 1927.

ASHOKAN VILLAGE, TOWN OF HUNTINGTON, N. Y. —Ordinance, May 28, 1927.

PENNSYLVANIA. — Enabling Act, Second-Class Cities, 1927, No. 69.

TENNESSEE.—Private Acts, 1925, Ch. 428.

SALT LAKE CITY, UTAH.—Ordinance, September, 1927.

ANTIGO, WIS.—Ordinance, August, 1927.

STAMFORD, CONN.—Ordinance, July 22, 1926.

Recent Zoning Decisions

LOUISIANA.—*State ex rel. Sausone v. City of New Orleans,* 113 So. Rep. 126. A petition for injunction to prevent the city from interfering with building construction, and mandamus to compel the city to issue a permit, alleging that the relator had complied with the building code and that the city arbitrarily refused to grant the permit and threatened to stop construction, states a cause of action.

MARYLAND. — *R. B. Construction Co. v. Jackson, Mayor of Baltimore,* 137 Atl. Rep. 278. Extracts from this decision, with excellent comment on it, are printed as an eidtorial in the *New York Law Journal* for July 7, 1927.

MASSACHUSETTS.—*Polish Political Club v. Cloper,* 157 N.E. Rep. 705. Since an automobile and filling station at common law is not a nuisance *per se* unless the fact of nuisance is admitted, an issue of fact is presented for determination in each case to enjoin its erection. Adjoining property owners cannot maintain such an action without evidence that plaintiffs would suffer peculiar damages if it were erected.

MISSISSIPPI.—*Dart v. City of Gulfport,* 113 So. Rep. 441. The issuance of a permit by the city to erect a filling-station does not prevent the city from abrogating rights thereunder by valid ordinance prohibiting the erection of such a structure within certain limits embracing the lot in question. But the power given by the Zoning Act (Laws 1924, Ch. 195) to "regulate and restrict" the erection of such a building does not authorize its prohibition.

NEW JERSEY.—*Raskind v. Dowling,* 138 Atl. Rep. 103. Since the passage of the Act of 1926, ch. 315, it is well settled that where it is shown that a board of appeals exists, an appeal to it from an adverse ruling of the building inspector is a prerequisite to the bringing of mandamus. In accord, *Elkay Realty Co. v. Redfern,* 138 *A.* 196.

NEW YORK.—*Matter of Morrone,* Supreme Court, Bronx County, reported in *New York Law Journal,* August 29, 1927. Certiorari to review the determination of the Board of Standards and Appeals of New York City, which granted a use variation to permit the erection of a public garage in a business district on a portion of a street between two intersecting streets for the reason that a public garage or stable existed there at the time the zoning resolution was adopted; and also by reason of practical difficulties or unnecessary hardships. The determination of the Board was upheld. The case is important as a careful review of the surrounding circumstances, serving as a guide in similar cases.

NEW YORK.—*People ex rel. Westchester Housing Corporation v. The Zoning Board of Appeals of the Village of Pelham,* Supreme Court, Westchester County, August, 1927. Certiorari to review the action of the Board in affirming the action of the Building Inspector rejecting applications for permission to erect twenty-four one-family houses. In the district in question the ordinance prohibited the erection of any building other than one "arranged, intended or designed exclusively for a private dwelling for one family only."

The houses are in groups of six, each upon a block of land. The houses in each group are divided from one another by party walls, each house having separate connections for sewer, water, gas, and electricity, and an individual heating plant. *Held,* reversing the decision of the Board, that there was nothing in the ordinance to prevent the erection of the houses in this district.

OREGON.—*Ludgate v. Somerville,* 256 Pac. Rep. 1043. A purchaser of residence property in a tract in which business uses are prohibited by private covenants acquires a property right of which he

New Jersey Adopts Constitutional Amendment for Zoning

At a special election on September 20, the voters of New Jersey approved the following amendment as a paragraph to be added to Article IV of the State Constitution:

5. The Legislature may enact general laws under which municipalities, other than counties, may adopt zoning ordinances limiting and restricting to specified districts and regulating therein, buildings and structures, according to their construction, and the nature and extent of their use, and the exercise of such authority shall be deemed to be within the police power of the state. Such laws shall be subject to repeal or alteration by the Legislature.

This was the only amendment adopted at the above mentioned election. Proposed changes in the Constitution on four subjects other than zoning were decisively defeated.

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is not divested by a city zoning ordinance allowing business in the tract. Neither alleged public inconvenience in having to go 1,900 feet further to unrestricted property for a filling-station, nor the opportunity for profit to the land intended to be used for business contrary to the ordinance, is sufficient to prevent the enforcement of the covenants.

VIRGINIA.—*Martin v. City of Danville*, 138 S.E. Rep. 629. An ordinance prohibiting the erection of gasoline filling-stations in residential districts without the written consent of two-thirds of the property owners within 500 feet, is valid.

VIRGINIA.—*Wood v. City of Richmond*, 138 S.E. Rep. 560. City's requirement of removal of filling-station driveway, construction of which it had previously authorized, reserving power of removal, is not an unreasonable exercise of the police power.

WASHINGTON.—*State ex rel. Seattle Title Trust Co. v. Roberge, Superintendent of Buildings*, 256 Pac. Rep. 781. The zoning ordinance of the city of Seattle, prohibiting the erection of a building for a philanthropic home in the first residence use district without the written consent of the owners of two-thirds of the property within 400 feet of the proposed building, is not, under the facts, invalid as arbitrary and unreasonable.

Recent Zoning Literature

"The Denver Zoning Ordinance," a paper by Fred W. Ameter, Secretary-Engineer of Board of Adjustment in Zoning, read before the American Society of Civil Engineers at Denver, Colo., July 14, 1927, discusses the following "unusual features" of the Denver zoning ordinance:

1. One zone map for use, height and area districts
2. Rear yards and loading and unloading space requirements in business and commercial zones
3. Front yards and setback regulations in local business zones
4. Use regulation in the residence "A" zone by area restrictions

In accordance with its usual custom, the Society will undoubtedly publish this paper in its proceedings.

The Skyscraper Attacked and Defended

"The Economic Height of Buildings" was the subject of discussion at Washington, D. C., of the Civic Development Department of the Chamber of Commerce of the United States during its 1927 annual meeting. The session was a debate between the leading advocates and critics of the tall building in this country. The Chamber has printed and issued the discussion as a pamphlet.

Zoning Experience in Pennsylvania

This subject was considered at the annual conference of the Association of Planning Commissioners of the state at its February meeting. A report of the proceedings is issued by the commonwealth as the June bulletin of the Association.

Boards of Appeal

"Zoning's Greatest Danger—Lawless Acts by Boards of Appeals" is the subject of a timely article in the August issue of this magazine.

The Municipal Bond Market

By Sanders Shanks, Jr.

Editor, *The Bond Buyer*

MUNICIPAL officials, even those charged with the administration of the fiscal affairs of a city, county or village, probably do not fully appreciate the favored treatment they receive at the hands of investment bankers. With the single exception of the United States Government, no other class of borrowers pays so little in the form of underwriting commissions to bankers as the typical American municipality. Many examples might be cited in support of this statement. The record, however, is a public one open to all interested, and space need not be utilized here to present the figures in detail. The fact is that municipal bond underwriters are satisfied with gross underwriting profits of less than one per cent ($10 per $1,000 bond) on the bond issues of the normal, well-managed, conservatively bonded community, and out of this modest profit must come advertising and sales expense, overhead and, usually, a "concession" to brokers, banks, etc.

Municipal bonds are, of course, extremely high-grade investments and are therefore readily salable. This explains, in part, why the dealer can handle them on a small profit margin. But there is more than that to it. Investment bankers, like merchants in other lines, must do a certain amount of "window dressing." Their show window is their list of security offerings. The presence thereon of a group of high-grade state or city bonds dresses up the whole list. The advertising value of association in a syndicate bringing out a bond issue of one of the big cities is considerable. The result is that we normally find intense competition in the bidding for municipal issues, which forces their prices up and the bankers' profit margins down, sometimes to the vanishing point.

At this writing, competition is as keen as ever, and throughout the past month hundreds of borrowing communities have sold their bond issues on remarkably advantageous terms. The following list indicates the trend of the market:

Amount	Issue	Rate (%)	Maturity	Net Yield (%)
$1,000,000	Louisville, Ky. ..	4	38 2/3 yr.	3.86
420,000	Birmingham, Ala..	4	1-10 yr. ser.	3.90
125,000	Aroostook Co., Me.	4	12 yr. avg.	3.93
310,000	Harrisb'g, Pa. ..	4	10¼ yr. avg.	3.96
45,500	Indpls., Ind. Pk. Dist.	4¼	13 yr. avg.	4.00
1,000,000	Chicago, Ill., Lincoln Pk. Dist..	4½	1-20 yr. ser.	4.02
		4, 4¼		
19,040,000	Detroit, Mich. ..	4½	various	4.116
17,000	Riverhead, N. Y.	4½	1-17 ser.	4.12
500,000	Dayton, Ohio ...	4¼	13¼ yr. avg.	4.13
190,000	Nashville, Tenn..	4¼	1-5 ser., 13 1/3 avg.	4.21
2,450,000	Memphis, Tenn...	4 & 4½	various	4.308
120,000	Morrow Co., Ore.	4¾	12 yr. avg.	4.44
65,000	Santa Maria,Calif.	5	11 1/6yr.avg.	4.44
87,000	Northfield, N. J.	5	1-30 ser.	4.58
21,000	Hastings, Minn...	4¼	7 5/6 yr. avg.	4.62

54c Added to the Appropriation *Every Minute*

Two Barber-Greenes Save $6508 in Ten Days for Newark

Newark's first two Barber-Greene Snow Loaders were turned loose during a big January snow storm. When they were taken back to their garage 10 days later they had virtually added $6508 to the appropriation for streets and alleys.

In addition, Newark's main thoroughfares were back to a "pre-snow basis."

More Than a Yard a Minute

During this 10-day period each Barber-Greene averaged 70 cubic yards of snow per hour, loading from windrows into trucks.

This exceptional loading speed got the trucks away to the dumps so much faster that each loader saved two trucking hours every hour it worked.

In addition 11.7c per yard were saved in handling costs over hand labor.

During the 10 day period these two savings combined to effect a total saving of 54c every minute that the loaders were on the streets.

Snow-Free Streets

In addition to these savings—which can be turned into more and better streets and alleys in the summer—the Barber-Greenes get business back to normal faster after a heavy snow.

It is hard to estimate what the savings to business men and stores amount to—but even in an average sized city they are tremendous.

Send for "Modern Snow Removal"

Write for a copy of *Modern Snow Removal*—and for Snow Loader cost and saving records. They may show the way to swell your appropriations—to build more and better streets in summer—and to keep streets snow free in winter.

During the summer the Barber-Greene Snow-Loader can be converted into an efficient Barber-Greene Bucket Loader. In this capacity it handles the materials for road and patching work—it handles your sewage sludge or your garbage—or any one of a number loading jobs.

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Planning for City Traffic.—The September, 1927, number of *The Annals* of the American Academy of Political and Social Science, 3622 Locust Street, Philadelphia, Pa. V + 264 pp. $2.00.

This symposium comprises 30 papers, by as many persons, on the problems of urban traffic, organized under five heads: I. Planning for Increased Traffic Facilities; II. Traffic Control; III. Planning to Prevent Traffic Accidents; IV. Traffic Problems and the Modern City Plan; and V. City Planning and Traffic Congestion. Specific topics under this arrangement include traffic and transit facilities, traffic surveys, control regulations, methods and devices, parking, storage garages, street lighting, grade crossings, street, city and regional plans, zoning and decentralization. The contributors are drawn from many fields, and include city planners, traffic consultants, engineers, automobile and electric railway men, journalists and civic experts. *The Annals* has in this issue again demonstrated the timeliness of the subjects that its editors select, and the wide range of inquiry and authoritativeness of discussion which marks them. Austin F. Macdonald, of the University of Pennsylvania, edits the number.

Report on Traffic and Transportation in the City of Newark and Vicinity.—The study made by Parsons, Klapp, Brinckerhoff & Douglas, engineers, to Mayor Thomas L. Raymond of Newark, N. J., is reported in this booklet of 126 pp. It includes a summary of general conditions and of a proposed system of transportation, with rapid transit and the extension and coordination of steam and electric railroad facilities serving Newark; this is followed by the details of a series of studies. 1927. (Apply to the engineers, 84 Pine Street, New York.)

Year Book, American Engineering Standards Committee, 1927.—This reviews the work of the Committee during the year and gives a list of 238 standardization projects, 103 of which had been approved by the end of the year; the status of the others is indicated. 80 pp. (Apply to the Committee, 29 West 39th Street, New York.)

Report to City of Cincinnati on a Rapid Transit Railway.—Made by The Beeler Organization, New York, to the special committee representing the Council and Board of Rapid Transit Commissioners of the City, and The Cincinnati Street Railway Co. It deals with the rapid-transit requirements of Cincinnati, with special reference to the possibilities of using in a comprehensve transportation system the partially built rapid transit line, initiated as a high-speed entrance for interurban electric railroads. Attractively prepared and illustrated. September 8, 1927. 166 pp. (Apply to C. O. Sherrill, City Manager, City Hall, Cincinnati, Ohio.)

Baltimore's Public Bath System Serves as Model.—An article by Robert F. G. Kelley, Superintendent, Free Public Bath Commission of Baltimore, in the *Baltimore Municipal Journal* for August 8, 1927. It gives a brief history of the public baths in that city. 5 cents. (Apply to the *Journal*, 906 American Building, Baltimore, Md.)

The Crime of Crimes.—An article in the July and August numbers of *Safeguarding America Against Fire*, dealing with the history, extent and methods of combating arson. (Apply to National Board of Fire Underwriters, 85 John Street, New York.)

The Durham Plan; The East Hartford Town Plan.—Two reports, of 88 and 61 pp. respectively, to the City Planning Commission of Durham, N. C., and the Town Planning Commission of East Hartford, Conn., by Herbert S. Swan, City Planner. After a general description of the cities' characteristics, historical, physiographic, industrial, etc., the questions of traffic thoroughfares, grade separation, transit, parks and parkways, and schools, are discussed, with special attention to the problems of flood protection and meadow development in the case of East Hartford, and a final chapter in each case presenting a comprehensive planning program. Both reports are attractively printed, and are well supplied with illustrations and maps. (Apply to Herbert S. Swan, 15 Park Row, New York.)

The City Manager.—By Leonard D. White, Ph. D., Professor of Political Science, University of Chicago. The University of Chicago Press, Chicago, Ill. 1927. XVII + 355 pp. $3.00.

This is No. IX of the Social Studies directed by the Local Community Research Committee of the University of Chicago. It is a study in administration rather than in political form, and is partly based upon a consideration of the personalities, backgrounds, methods and achievements of the managers, past and present, in a number of cities, starting with Cleveland, the largest and the least orthodox. The Cincinnati, Kansas City, Pasadena, and Dayton managers also receive a chapter for each city, and several others are treated more briefly. After these chapters, the author discusses the relation of the manager to the charter, to the council and to municipal administration generally, and deals with city managership as a profession. A concluding chapter summarizes Professor White's searching analysis, with suggestions for making the city manager a still more effective instrument of efficient administration under popular control. The book is a valuable contribution in this field, and its readability will assist in extending its use.

Twenty Years of City Planning Progress in the United States.—A 46-page pamphlet presenting an address by John Nolen as President of the National Conference on City Planning. Besides a textual account of city planning progress there is an appendix containing a table of cities with comprehensive plans, zoning ordinances and official city plan commissions, lists of reviews of city planning, colleges where city planning lectures or courses are given, new towns, garden cities, etc., and planning and zoning statistics. (Apply to John Nolen, Harvard Square, Cambridge, Mass.)

First Annual Report of the Bureau of Municipal Equipment, St. Paul, Minn.—A report of 16 pp., 14 x 17 inches, compiled by the Accounting Division of the Department of Public Works of St. Paul. It goes into the transportation problem of the city government and gives costs of transportation both by city-owned and hired equipment, financial statements, inventories, etc. (Apply to the Bureau, City Hall, St. Paul, Minn.)

State Administrative Review of Local Budget Making.—Publication No. 3 of the Municipal Administration Service, New York, constituting an examination of state supervision of local taxes and bonds in Indiana and Iowa, by Wylie Kilpatrick, Associate Research Professor of Government at the University of Virginia. 40 pp. 25 cents. (Apply to Municipal Administration Service, 261 Broadway, New York.)

The Preparation of a Long-Term Financial Program.—Publication No. 5 of the Municipal Administration Service, by C. E. Rightor, Chief Accountant, Detroit Bureau of Governmental Research, Inc., and Secretary, Mayor's Committee on Finances, City of Detroit. Discusses the need of long-term planning and experiences of various cities, and presents a procedure for formulating such a program. The booklet is the basis of an article in THE AMERICAN CITY for September, pages 311 and 312. 25 cents. (Apply to Municipal Administration Service, 261 Broadway, New York City.)

Proceedings of the New Jersey Sewage Works Association.—This is a 38-page booklet constituting a report of the twelfth annual meeting of this Association, in Trenton. Papers on various sewage treatment plants in New Jersey, and on problems of ground water infiltration, laundry wastes, ventilation in trickling filters, and plant records, are included. (Apply to John R. Downes, Secretary of the Association, Bound Brook, N. J.)

Motor Vehicle Accidents.—A third study of such accidents in the state of Connecticut, including those of 1926, made by Professor Richard Shelton Kirby of the Department of Civil Engineering, Yale University, in cooperation with the State Motor Vehicle Department, and presented with the aid of the Hartley Corporation. The results of the study are portrayed graphically, the effort being to make them readily understandable. 45 pp. (Apply to R. B. Stoeckel, State Commissioner of Motor Vehicles, Hartford, Conn.)

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The Organization and Administration of Playgrounds and Recreation.—By Jay B. Nash, Associate Professor of Physical Education, School of Education, New York University; formerly Superintendent of Recreation and Director of Physical Education, Oakland, Calif. A. S. Barnes & Co., New York. 1927. XII + 547 pp. Illustrated. $4.00.

A book that is the fruit of practical, successful experience in a division of civic service commands respect; this book commands also interest and enthusiasm, for it is based not only on thorough experience, but also on a clearly conceived ideal of the play life of children and adults in all its activities, presented with clarity, vigor, and keenness, and with a sympathetic understanding of human needs. Against the background of simple, wholesome old-time play and work activities of home and community the author builds up a well-organized structure to meet the recreational needs of our present complicated life, and tells why and how it is constructed, how it is to be financed, maintained and administered, and what it will do for old and young. Provision for recreation is shown to be a part of city planning. What cities and city officials may legally do for recreation and what their concurrent liabilities are, fill a very important chapter. The various phases of responsibility, of method, of management; details of design and equipment of playgrounds; programs to meet the needs of different ages and classes; municipal golf, municipal camps, community drama, music, dancing and games; winter activities; the construction, operation and control of swimming pools—all these are dealt with. Full bibliographies enrich the value of the book for reference. The appendices give the recreation enabling acts of several states, and other basic material for organizing public recreation. The closing chapter presents practical points on publicity for recreation departments. This book will enlighten the playground official, coordinate his ideas, and show how to make the best use of the recreation appropriation. It should be read by citizens for enjoyment and inspiration, and kept for permanent reference as a handbook.

Community Advertising.—(a) The Bureau of Advertising of the American Newspaper Publishers Association puts out a 56-page booklet dealing with the extent, advantages and methods of community advertising, with special reference to newspapers as a medium. Many typical advertisements are reproduced. (Apply to the Bureau, 270 Madison Avenue, New York.)

(b) The New York Times has prepared a prospectus on this subject, giving objectives, results, extent and methods, from the standpoint of the New York newspaper. 26 pp., mimeographed. (Apply to The New York Times, Times Square, New York.)

Economics of Community Advertising.—A paper by Don E. Mowry, Secretary-Treasurer of the American Community Advertising Association, discussing the need of more study of the methods and results of advertising specific communities to the country at large. 5 mimeographed pp. (Apply to Mr. Mowry, Association of Commerce, Madison, Wis.)

Minneapolis, Metropolis of the Northwest.—A quarterly magazine published by the Minneapolis Civic and Commerce Association. The first issue is that of August, with 46 large pages. It features matters of river and railroad traffic, the beauties of the lakes of Minneapolis, the Federal Reserve and other banks, and describes the current activities of the Civic and Commerce Association. It is handsomely illustrated. 35 cents. (Apply to the Association, New York Life Building, Minneapolis, Minn.)

Chicago Plan Progress.—A 43-page booklet giving the specific record of progress in carrying out the Chicago Plan, and the achievements of the Chicago Plan Commission since its inception. Arranged by alphabetical topics. (Apply to the Commission, 208 W. Washington Street, Chicago, Ill.)

Convention Proceedings, Pacific Coast Association of Port Authorities.—The September number of *World Ports* includes the proceedings of the 14th annual convention of the above organization, which was held in Vancouver in July of this year. The name was changed at that time to the Association of Pacific and Far East Ports. Several papers on port problems are given, with discussion. 50 cents. (Apply to T. S. McChesney, 307 Wells-Fargo Building, New Orleans, La.)

Munus Capio.—A paper on municipal street lighting, by L. A. S. Wood, manager of the street-lighting section, Westinghouse Electric & Manufacturing Co., presented before the 1927 convention of the International Association of Municipal Electricians. 14 pp. (Apply to the author, East Pittsburgh, Pa.)

Landscape Architecture.—By Stephen Child. Stanford University Press, Stanford University, Calif. 1927. XIV + 279 pp. $7.50.

A series of twelve letters to a mythical and composite patron presents the author's ideas about the treatment of home grounds and gardens, singly and in groups and neighborhoods, hotel grounds, village improvement, playgrounds, parks—for village, city, and metropolitan area, and about city planning. The letters are each introduced by a few explanatory paragraphs and a general postscript gives some supplementary ideas, including a discussion of landscape architecture as a profession, and of the proper basis for fees. There are also notes on planting and other matters, and a bibliography. Particularly interesting is the section on city planning, which includes an able general discussion from the landscape architect's point of view. The book is handsomely gotten up and illustrated.

Flood, Forests and the Future.—The American Tree Association has compiled this booklet dealing with reforestation and flood control, inspired by the Mississippi River floods. The problem is presented by Charles Lathrop Pack, President of the Association, and there are articles by various foresters and others. 32 pp. (Apply to the Association, 1214 16th Street N. W., Washington, D. C.)

Suggestions for Observance of Fire Prevention Week.—Fire Prevention Bulletin No. 31, of the Insurance Department of the Chamber of Commerce of the United States, contains suggestions and programs for the observance of Fire Prevention Week, October 9-15. 8 pp. (Apply to the Department, Washington, D. C.)

Essentials of American Government.—A text-book for the third or fourth year in high school, by John M. Mathews, Ph. D., Professor of Political Science, University of Illinois. It explains the organization and functions of the federal, state and local governments, not without considerable reference to social, economic and historical backgrounds. The general nature and necessity of government are briefly discussed. New developments are given attention. The various topics are in general treated in an enlightened and unbiased manner. Of special interest to municipalities are the chapters on City Government and Municipal Activities and Problems, and such chapters as Public Utilities and Charities, Correction, and Law Enforcement. 443 pp. $1.60. (Apply to Ginn and Co., 15 Ashburton Place, Boston, Mass.)

Report of the Chief Engineer of the Board of Estimate and Apportionment, New York, 1925.—A 313-page booklet, addressed to Mayor James J. Walker as Chairman of the Board, by Arthur S. Tuttle, Chief Engineer, together with reports of deputies and assistants on various phases of the work. Building operations, highways, parks, playgrounds, drainage, grade crossings, arcaded sidewalks, waterfronts and sewage disposal are among the subjects treated. (Apply to Chief Engineer, Board of Estimate, Municipal Building, New York.)

Building Code, Kansas City, Mo., 1927.—A cloth-bound book of 259 pp., containing the building code ordinance approved March 14, 1927. The code was compiled for the City Manager by Frederick C. Gunn, C. E., as professional adviser. $1.00. (Apply to Public Works Department, Kansas City, Mo.)

How to Build a Tennis Court; How to Form a Community Club.—A booklet combining these two topics, forming No. 511B of Spalding's Athletic Library. The first subject covers 58 pp., the second, 51. Most of the contents is new, including a chapter on tennis-court lighting. The remainder is a partial revision. The community club section relates to outdoor clubs, giving many suggestions for their formation and assistance. 50 cents. (Apply to American Sports Publishing Co., 45 Rose Street, New York.)

Utilization of Blast Furnace Slag in Highway Improvement.—A bulletin of the Missouri School of Mines, by Clarence E. Bardsley, Associate Professor of Civil Engineering. He sketches the history of the use of slag and the methods of its production, and discusses the results of actual tests on this material, presenting the conclusions with recommendations for further study. An extensive bibliography is included. 115 pp. (Apply to Librarian, Missouri School of Mines, Rolla, Mo.)

Bulletin of the Welfare Council of New York City.—This is a special bulletin issued during the summer months, the news report of the Welfare Council at other times during the year being published in conjunction with *Better Times*. No. 1 is dated July 25, and consists of 8 pp. (Apply to Welfare Council, 151 Fifth Avenue, New York.)

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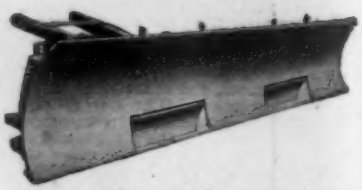

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Weights and Measures Administration.—By Ralph W. Smith, Inspector of Weights and Measures, United States Bureau of Standards. Superintendent of Documents, Government Printing Office, Washington, D. C. 1927. VI + 270 pp. 70 cents.

This small volume is No. 11 of the Handbook Series of the Bureau of Standards. It is the result of a demand for information as to the supervision of weights and measures from supervisors themselves, both new and experienced, state and local officials interested in establishing such supervision, manufacturers of weighing and measuring devices, and industry in general. The present volume is designed to give a general and complete picture of a comprehensive system of supervision; it will be followed by two others, one containing codes of specifications and tolerances for commercial weighing and measuring devices and the other giving detailed descriptions of such devices and of methods for inspection and testing.

Highway Bridge Location.—Bulletin No. 1486 of the United States Department of Agriculture, by C. B. McCullough, Bridge Engineer, Oregon State Highway Commission. A 32-page illustrated booklet taking up the various considerations entering into location of highway bridges, such as first cost, maintenance, alignment, grade lines, traffic, etc. It was prepared in cooperation with the Bureau of Public Roads. 15 cents. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

Descriptive Data of Sewerage and Sewage Treatment Systems in New York State.—A 15-page pamphlet issued by the Division of Sanitation, New York State Department of Health, presenting, in tabular form, data on population; age, type, and extent of sewer systems; age and character of sewage treatment works, with volume of sewage treated, and the stream receiving the effluent. 1927. (Apply to C. A. Holmquist, Director, Division of Sanitation, State Department of Health, Albany, N. Y.)

Master Plan of the Great Neck District, Nassau County, Long Island, N. Y.—A regional study prepared for the Great Neck Association by Richard Schermerhorn, Jr., of New York. It is set forth in an attractive booklet of 31 pages, containing eight maps, six of them folded inserts; a full-page drawing of the proposed railroad-station development; and a page of the proposed standard street sections. Present conditions, including highways, topography, surface drainage, water supply, sewers, municipal subdivisions, real estate developments, schools and parks, are presented, and a plan proposed for future guidance to conserve the community's best features. $1.00. (Apply to Mr. Schermerhorn, 15 East 40th Street, New York.)

The Cleanliness Journal.—A new publication, to appear at occasional intervals, under the auspices of Cleanliness Institute, which was recently organized in New York. It is financed by the Association of American Soap and Glycerine Producers. The aim of the Journal is to circulate brief articles, stories, quotations, etc., relating to various aspects of cleanliness, personal and commercial. The first number is dated July, and consists of 14 pages. (Apply to the Institute, 45 E. 17th St., New York.)

Health and Community Prosperity.—Health Bulletin No. 2 of the Insurance Department of the Chamber of Commerce of the United Stats. It is a four-page leaflet containing information and suggestions for health committees, particularly as to economic loss due to sickness, and as to what is being accomplished in disease prevention. (Apply to the Department, Washington, D. C.)

Taxation of Industry for Local Purposes.—A 54-page monograph in mimeographed form, prepared under the auspices of the Committee on Taxation of the Greater Muskegon Chamber of Commerce. The purpose of the study was to determine a tax policy that would encourage expansion of existing industries and the establishment of new industries. Taxation policies of over 100 cities are indicated in a tabulated appendix. (Apply to the Secretary of the Chamber, Muskegon, Mich.)

Public Accident Reporting.—A pamphlet of 40 pages, issued by the National Safety Council, for the purpose of presenting a standard accident reporting system for use by police, motor vehicle and highway departments. It is a revision of the pamphlet, "Public Accident Statistics," issued last year. (Apply to the Council, 108 East Ohio Street, Chicago, Ill.)

How to Put Out a Fire.—A 6-page pamphlet issued by the National Fire Protection Association, to promote better understanding of the several types of first-aid fire appliances and their utilization. 5 cents; discount for quantity. (Apply to the Association, 40 Central St., Boston, Mass.)

Proceedings, Fifth Annual Asphalt Paving Conference, 1926.—A booklet of 155 pp., including papers grouped under the following topics: highway economics, asphalt macadam pavements, surface treatment of roads, salvaging old pavements, construction of city types of pavement, asphalt pavement repairs and research, black base pavements, and rural and waterfront park development. (Apply to the Asphalt Association, 441 Lexington Avenue, New York.)

Betriebsergebnisse der Schlammbelegungsanlage des Ruhrverbands in Essen-Rellinghausen.—A 20-page pamphlet in German by Drs. Imhoff and Sierp and Engineer Fries, Essen, Germany, giving the operating results of the activated-sludge sewage-treatment installation of Essen-Rellinghausen, for over a year. There are 18 photographs and diagrams. Reprinted from *Das Technische Gemeindeblatt.* (Apply to Dr. Karl Imhoff, Kronprinzenstrasse 37, Essen, Germany.)

The Architectural Forum—Public Buildings Reference Number, Part II.—The June issue having been Public Buildings Reference Number, Part I, the September *Architectural Forum* continues the subject with articles on auditoriums, post offices and other items of the Federal Government's building program, water-works structures, community buildings, public baths, and comfort stations. There are many striking illustrations. $2.00 for either reference number. (Apply to Rogers & Manson Co., 383 Madison Avenue, New York.)

Consolidated Building Code of Greensboro, N. C.—A booklet of 174 pp. with a zoning map of the city. It includes the building, electrical, plumbing and zoning ordinances enacted in 1927, constituting a complete building code. (Apply to P. C. Painter, City Manager, Greensboro, N. C.)

Report of the Geodetic, Topographic and Block Survey of Greensboro, N. C.—In order to supply the lack of a comprehensive and accurately up-to-date map of the city, Greensboro in 1926 had this survey made by R. H. Randall and Co., of Toledo, Ohio. The booklet at hand, containing 125 pp., gives the results of the work and includes a large folded map. (Apply to P. C. Painter, City Manager, Greensboro, N. C.)

The Bail System in Chicago.—This is the first of a series of Social Service Monographs, published by the University of Chicago Press in conjunction with the *Social Service Review.* It is by Arthur Lawton Beeley, Ph. D., Professor of Social Technology, University of Utah, and consists of 200 pp. Besides treating of the bail system and its administration, it is a study of unsentenced jail prisoners in Chicago. $2.00. (Apply to the University of Chicago Press, Chicago, Ill.)

The Juvenile Detention Home in Relation to Juvenile Court Policy.—A study of intake in the Cook County Chicago Juvenile Detention Home, made by the Graduate School of Social Service Administration of the University of Chicago, under the direction of Dr. Edith Abbott, Dean of the School, and Savilla Millis, Research Assistant, who is given as the author of this 96-page report. 3 cents for postage. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill.)

Report of an Investigation of the Pollution of Lake Michigan.—This is Public Health Bulletin No. 170 of the United States Public Health Service, and deals with pollution in the vicinity of South Chicago and the Calumet and Indiana harbors, as investigated in 1924 and 1925, by H. R. Crohurst and M. V. Veldee, of the Public Health Service, in cooperation with the Sanitary District of Chicago, the Chicago Department of Health, the Indiana State Board of Health, and the Illinois State Department of Public Health. 134 pp. (Apply to the United States Public Health Service, Washington, D. C.)

The Children's Bureau of Cleveland.—A study of the care of dependent children in Cleveland, Ohio, made by Mary Mather Leete, and constituting Publication No. 177 of the Children's Bureau of the United States Department of Labor. 103 pp. 15 cents. (Apply to Government Printing Office, Washington, D. C.)

Course of Study for Non-English-Speaking Adults.—Bulletin No. 885, of the University of the State of New York, containing a three-year course of study, suggestions for grading pupils, discussion of method, bibliographies and the Regents word list of 4000 words. 181 pp. (Apply to University of State of New York Press, Albany, N. Y.)

Hallowe'en Suggestions.—An 18-page bulletin prepared by the Playground and Recreation Association of America, containing directions for a "Ghostly Gambol"; a playlet, "Wise Witch"; and other suggestions for music and dramatics suitable for the evening. 25 cents. (Apply to the Association, 315 Fourth Avenue, New York.)

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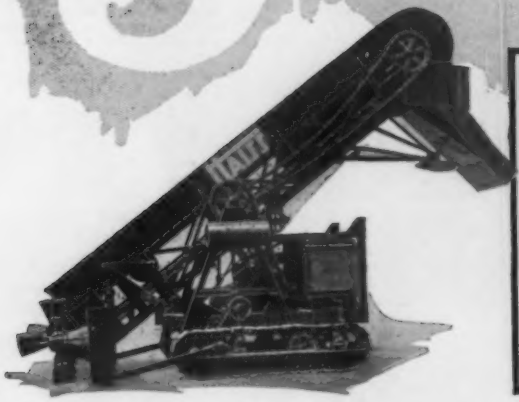

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The Straightening of the Chicago River.—A book of 214 pp. constituting a report made by the Citizens Committee on River Straightening to the Chicago City Council Committee on Railway Terminals, dated December, 1926. It includes a history of the river and the efforts directed toward straightening, and a study of the desirability and of the cost and other problems involved in the removal of the bend in the South Branch south of Polk Street. The book suffers from the lack of an index. $2.00. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill.)

Zoning Experience in Pennsylvania.—Bulletin CPC-14 of the Pennsylvania Association of Planning Commissioners, assembled from papers and discussions at the annual conference of the Association, in February, 1927. Zoning in Bethlehem, Chester, Johnstown, Pittsburgh, Scranton, and New Castle is gone into. 23 pp. (Apply to Bureau of Municipal Affairs, State Capitol, Harrisburg, Pa.)

Vital Statistics.—A paper on the constitutional, statutory and administrative aspects of vital statistics, by W. Thurber Fales, Bureau of Vital Statistics, Montgomery, Ala., Edwin W. Kopf, Metropolitan Life Insurance Co., New York, and James A. Tobey, Borden Co., New York. It is reprinted from the August, 1927, issue of the *American Journal of Public Health*. 5 pp. (Apply to Dr. Tobey, Borden's, 350 Madison Avenue, New York.)

Agricultural Mecklenburg and Industrial Charlotte.—A 317-page booklet issued by the Chamber of Commerce, Charlotte, N. C., and prepared by Edgar T. Thompson, Department of Rural Social-Economics, University of North Carolina. It is chiefly concerned with the historic, social, political, industrial and agricultural aspects of Mecklenburg County; Charlotte, the county-seat, receives attention incidentally and has a chapter devoted to its government. 1926. (Apply to the Chamber of Commerce, Charlotte, N. C.)

The Nations of the World.—A book of 46 pp., forming one of the series, "Pageants with a Purpose," of which Linwood Taft, Ph. D., is editor. It is a description of a pageant designed to show contributions of various nations to civilization, and was prepared by the faculty of Public School 53, Buffalo, N. Y. It can be produced by from 100 to 400 participants. The words, music and directions as to costumes, etc., are included. The European section is somewhat limited, there being, for example, no representative for Germany, Austria, Russia, Norway or Sweden. There are several illustrations of an actual production of the pageant. $2.00. (Apply to A. S. Barnes & Co., 67 West 44th Street, New York.)

Municipal Government and Activities for the City of Milwaukee for 1926.—The Common Council of Milwaukee has published this attractive pamphlet of 93 large pp. as its report, for 1926, of the activities of the city departments, boards and commissions. It was compiled and edited by Frederick N. MacMillin, Municipal Reference Librarian, and contains 65 pp. of text with illustrations and a statistical appendix containing various financial statements, etc. Apply to Municipal Reference Library, City Hall, Milwaukee, Wis.)

American Indian and Other Folk Dances.—Five dances of the North American Indians, four of the Armenians, and one each of the Portuguese, Greeks, Scotch, Germans, Spanish and Mexicans, are described in this book of 77 large pp. The material has been collected and presented by Mary Severance Shafter, with music arranged by Josephine Condon. There are several handsome photographic illustrations of native dancers. The book is intended for school, pageant and playground purposes. There is a note on costuming for Indian dances. 1927. $3.00. (Apply to A. S. Barnes & Co., 67 W. 44th Street, New York.)

Second Annual Report of the Niagara Frontier Planning Board, 1926.—A 70-page booklet, addressed to The New York State Board of Housing and transmitted by the latter to Governor Smith. It recounts the past year's work of the Niagara Board in matters of regional and community planning in Erie and Niagara Counties, both on the part of the Board and of the voluntary Niagara Frontier Planning Association. It is supplied with many maps and photographs. (Apply to Niagara Frontier Planning Board, Tonawanda, N. Y.)

Regulation of Barber Shops, etc.—An amendment to the Sanitary Code of the State of New York, taking effect August 1, 1927, and published in the July 11 issue of *Health News*. It applies to barber shops, hair-dressing establishments, and manicuring and beauty parlors. 1 p. (Apply to the State Department of Health, Albany, N. Y.)

Our Traffic Problem.—A 12-page pamphlet by Clifton R. Bechtel, Chairman of the Committee on Zoning, Chicago Real Estate Board, and published by the Library of the Board. It takes up remedies for traffic congestion, including those that involve physical improvements and those that are matters of control; also the effect of street improvements on real estate values. 1927. 2 cents for postage. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill.)

Comparative Statistics.—Cities of Ohio, 1925.—A 112-page booklet prepared by the Bureau of Inspection and Supervision of Public Offices, and containing an analysis of financial operations of city government in Ohio, 1925. Published in 1927. (Apply to the Bureau, Columbus, Ohio.)

Cancer.—This is the leading topic of the spring number, 1927, of *The Commonhealth*, the quarterly bulletin of the Massachusetts Department of Public Health. It includes papers on the cancer study program of Massachusetts, and the parts played by the nurses, hospitals, clinics, private organizations and the nation in dealing with cancer. (Apply to Room 546, State House, Boston, Mass.)

Report of Committee on Statistics and Origin of Fires.—This report, dated May 26, 1927, is made to the National Board of Fire Underwriters, and contains many tables of statistics relating to fires occurring in American cities. These are given in considerable detail for all cities having a population of 20,000 and more. (Apply to the Board, 85 John Street, New York.)

Gas Rates for 121 Kansas Cities and Villages.—A pamphlet of 15 pp., constituting Bulletin No. 65 of the League of Kansas Municipalities, dated August 15, 1927. Rates and certain other data are given for both municipal and private plants. $1.00. (Apply to the League, Lawrence, Kans.)

Mobility of Seats.—A 4-page reprint of an article by Gavin Hadden, C. E., published in the *Athletic Journal*. It deals with movable stands for athletic fields and gymnasiums, and for spectators at parades and similar public events. (Apply to the author, 607 Fifth Avenue, New York.)

Akron Traffic Ordinance.—A booklet published by the Akron Automobile Club, containing the traffic ordinance effective August 11, 1927, with an index, 23 pp. Vest-pocket size. (Apply to the Club, Akron, Ohio.)

Methods of Teaching Adult Aliens and Native Illiterates.—Bulletin No. 7, 1927, of the Bureau of Education, United States Department of the Interior. Intended for use in colleges, universities and normal schools, and for teachers of adults. It has been prepared by a committee of 11 men and women from educational fields, national, state and municipal. 58 pp. 10 cents. (Apply to the Government Printing Office, Washington, D. C.)

First Steps in Stadium Operation.—A reprint of a 9-page article by E. K. Brown, which appeared in *Parks and Recreation*, the official publication of the American Institute of Park Executives. It takes up many practical matters involved in running a large stadium, with particular reference to Soldiers' Field, Chicago. (Apply to *Parks and Recreation*, Rockford, Ill.)

Conditioning Gymnastics.—A 50-page booklet by S. C. Staley, Associate Professor of Physical Education, University of Illinois, describing the "natural" system of physical training, stated to have originated with the French Navy and to have been used extensively by all the Allied Armies in the World War, frequently being called "trench exercises" in that connection. Illustrated. $1.00. (Apply to A. S. Barnes & Co., 67 West 44th Street, New York.)

Prospectus of Real Estate Appraisal System.—An 8-page pamphlet of the J. M. Cleminshaw Co., describing its method of real estate appraisal, for cities, manufacturing companies, etc. (Apply to J. M. Cleminshaw Co., Leader Building, Cleveland, Ohio.)

Reports Received

BOSTON, MASS.—Tenth Year Book, Committee of the Permanent Charity Fund, Inc., to June 30, 1927.

BUFFALO, N. Y.—Annual Report, Children's Court, 1926.

ESSEX COUNTY, N. J.—Annual Report, Park Commission, 1926.

GREENWOOD, S. C.—Annual Report, Town Council and Water and Electric Light Plant, 1926.

LOUISVILLE, KY.—Annual Report, Louisville Water Co., 1926.

for Road Building and Maintenance

Trackson-Fordson is the favorite Crawler Tractor with road contractors and highway officials all over the country! Its sure-footed power and speed cuts costs on grading, leveling, excavating, ditching, filling, loading, hauling, and numerous other operations.

No matter how "tough" the job, Trackson will meet every emergency, and is a brute for long hours and hard work! Its low first cost, economical operation and maintenance, together with its general all around usefulness, makes Trackson-Fordson the ideal power unit for contracting and road building.

Write today for valuable road construction and contracting bulletin. It will be sent you FREE.

Trackson Company
MAKERS OF FULL-CRAWLERS
518 CLINTON ST. MILWAUKEE, WIS.

Mention THE AMERICAN CITY—it helps.

Conventions—When and Where

OCTOBER 3-7.—MEMPHIS, TENN.
Playground and Recreation Association of America. Annual convention. Secretary, H. S. Braucher, 315 Fourth Avenue, New York.

OCTOBER 4-5.—GREENFIELD, MASS.
Massachusetts Federation of Planning Boards. Annual conference. Executive Secretary, Edward T. Hartman, 37 State House, Boston, Mass.

OCTOBER 5-8.—SAN JOSE, CALIF.
American Water Works Association, California Section. Annual convention. Secretary, Paul E. Magerstadt, 512 16th Street, Oakland, Calif.

OCTOBER 10-12.—KANSAS CITY, MO.
American Social Hygiene Association. Annual regional conference. Acting Director, Gertrude R. Luce, 370 Seventh Avenue, New York.

OCTOBER 10-12.—HOT SPRINGS, ARK.
Southwest Water Works Association. Convention. Secretary, Louis A. Quigley, Fort Worth, Texas.

OCTOBER 10-14, 1927.—TORONTO, ONT.
National Tax Association. Annual meeting. Secretary, Alfred E. Holcomb, 195 Broadway, New York.

OCTOBER 10-14.—CHICAGO, ILL.
Illuminating Engineering Society. Annual convention. General Secretary, L. H. Graves, 29 West 39th Street, New York.

OCTOBER 12.—HADDONFIELD, N. J.
Police Commissioners and Chiefs of Police of New Jersey. Meeting for discussion of uniform traffic-light control for state. Address: George W. Baxter, Chief of Police, Haddonfield, N. J.

OCTOBER 12-13.—RACINE, WIS.
Wisconsin Chiefs of Police Association. Annual meeting. Secretary-Treasurer, Don McKay, Police Department, Waukesha, Wis.

OCTOBER 12-14.—COLUMBUS, OHIO.
American Society of Civil Engineers. Fall meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

OCTOBER 12-14.—JUNCTION CITY, KANS.
League of Kansas Municipalities. Annual convention. Secretary-Treasurer, John G. Stutz, University of Kansas, Lawrence, Kans.

OCTOBER 13-14,—TORONTO, ONT.
Canadian Tax Conference of Citizens Research Institute of Canada. Annual convention. Director, Horace L. Brittain, 21 King Street, East, Toronto, Ont.

OCTOBER 17.—CINCINNATI, OHIO.
Conference of State Sanitary Engineers. Meeting. Secretary-Treasurer, Arthur P. Miller, Butler Building, 3 B Street, S. E., Washington, D. C.

OCTOBER 17-21.—CINCINNATI, OHIO.
American Public Health Association. Annual meeting. Secretary, Homer N. Calver, 370 Seventh Avenue, New York.

OCTOBER 20-21.—JACKSON, MISS.
Mississippi State Board of Development. Annual meeting. Secretary, L. J. Folse, Lamar Life Building, Jackson, Miss.

OCTOBER 23-26.—COLUMBUS, OHIO.
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, Clarence R. Miles, Chamber of Commerce, Davenport, Iowa.

OCTOBER 24-26.—TORONTO, ONT.
International Association of Dairy and Milk Inspectors. Annual convention. Secretary-Treasurer, Ivan C. Weld, Pennsylvania Avenue at 26 Street, Washington, D. C.

OCTOBER 24-28.—BOSTON AND THREE NEW ENGLAND REGIONS.
American Civic Association. First Traveling Annual Meeting. Executive Secretary, Harlean James, Union Trust Building, Washington, D. C.

OCTOBER 26-29.—PINEHURST, N. C.
American Institute of Steel Construction. Annual convention. Executive Director, Charles F. Abbott, 285 Madison Avenue, New York.

OCTOBER 27-28.—ROCHESTER, N. Y.
American Water Works Association, New York Section. Annual meeting. Secretary, E. D. Case, 50 Church Street, New York.

FIRST WEEK IN NOVEMBER.—WASHINGTON, D. C.
General Conference of Crime Commissions and Similar Bodies. Address: Hon. Richard Washburn Child, Acting Chairman, National Crime Commission, 120 Broadway, New York.

NOVEMBER 1-4.—HOUSTON, TEXAS.
Texas Association of Sanatarians. Short School. Secretary, E. G. Eggert, Texas State Board of Health, Austin, Texas.

NOVEMBER 7-9.—DURHAM, N. C.
American Water Works Association, North Carolina Section. Annual meeting. Secretary-Treasurer, H. G. Baity, Associate Professor, School of Engineering, University of North Carolina, Chapel Hill, N. C.

NOVEMBER 9-11.—NEW YORK.
Governmental Research Conference. Annual meeting. Secretary-Treasurer, Russell Forbes, 261 Broadway, New York.

NOVEMBER 9-11.—NEW YORK.
National Association of Civic Secretaries. Annual meeting. Secretary, Henry H. Curran, City Club 55 West 44th Street, New York.

NOVEMBER 10-11.—NEW YORK.
National Municipal League. Annual convention. Secretary, H. W. Dodds, 261 Broadway, New York.

NOVEMBER 10-11.—KITCHENER, ONT.
Ontario Associated Boards of Trade and Chambers of Commerce. Annual meeting. Secretary, T. Marshall, Royal Bank Building, Toronto, Ont.

NOVEMBER 14-18.—DALLAS, TEXAS.
American Society for Municipal Improvements. Annual convention. Address: E. A. Wood, City Engineer, Dallas, Texas.

NOVEMBER 17-18.—PEORIA, ILL.
Illinois Municipal League. Annual convention. Secretary, A. D. McLarty, Urbana, Ill.

NOVEMBER 28, WEEK OF.—ATLANTA, GA.
Asphalt Association. Annual Paving Conference to be held jointly with the Association of Asphalt Paving Technologists. Secretary and General Manager, J. E. Pennybacker, 441 Lexington Avenue, New York.

DECEMBER 1-2.—WASHINGTON, D. C.
Highway Research Board, National Research Council. Annual meeting. Director, Charles M. Upham, Washington, D. C.

DECEMBER 2-3.—PRINCETON, N. J.
New Jersey Sanitary Association. Annual meeting. Secretary, Edward Guion, M. D., Box 418, Atlantic City, N. J.

DECEMBER 7-8.—WASHINGTON, D. C.
National Rivers and Harbors Congress. Annual convention. Secretary, S. A. Thompson, 824 Colorado Building, Washington, D. C.

DECEMBER 9-10.—WILSON, N. C.
North Carolina Commercial Secretaries Association. Annual convention. Secretary, Joe Stubbs, Hendersonville, N. C.

DECEMBER 19-21.—LAWRENCE, KANS.
American Municipal Association. Annual meeting. Executive Secretary, John G. Stutz, Lawrence, Kans.

DECEMBER 28-30.—WASHINGTON, D. C.
American Political Science Association. Annual meeting. Secretary, Prof. J. R. Hayden, University of Michigan, Ann Arbor, Mich.

JANUARY 9-10, 1928.—DETROIT, MICH.
International Association of Street Sanitation Officials. Annual convention. Secretary, A. M. Anderson, 10 South LaSalle Street, Chicago, Ill.

JANUARY 9-13.—CLEVELAND, OHIO.
American Road Builders' Association. Annual convention and Road Show. Secretary, Ethel A. Birchland, Earle Building, Washington, D. C.

JANUARY 18-20.—NEW YORK.
American Society of Civil Engineers. Annual meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JANUARY, FOURTH WEEK.—NEW YORK.
American Society of Heating and Ventilating Engineers. Annual meeting. Secretary, A. V. Hutchinson, 29 West 39th Street, New York.

FEBRUARY 8-10.—WATERLOO, IOWA.
Iowa Engineering Society. Annual meeting. Secretary, John S. Dodds, Ames, Iowa.

FEBRUARY 21-24.—WICHITA, KANS.
Southwest Road Show and School. Secretary-Treasurer, F. G. Wieland, Wichita, Kans.

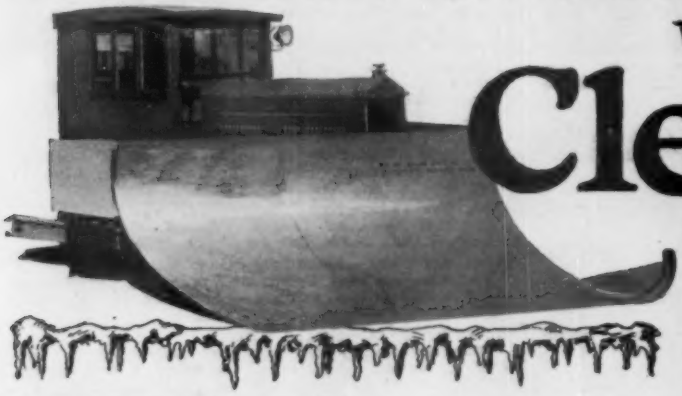
FEBRUARY 23-25.—TORONTO, ONT.
Ontario Good Roads Association. Annual meeting. Secretary, W. S. Squire, Toronto, Ont.

FEBRUARY 25-MARCH 1.—BOSTON, MASS.
National Education Association, Department of Superintendence. Annual meeting. Secretary, S. D. Shankland, 1201 16th Street N.W., Washington, D. C.

FEBRUARY 28-MARCH 1.—PHILADELPHIA, PA.
American Concrete Institute. Annual convention. Secretary, Harvey Whipple, 2970 West Grand Boulevard, Detroit, Mich.

JULY 2-7.—PARIS, FRANCE.
International Federation for Housing and Town Planning. Congress. Organizing Secretary, H. Chapman, 24 Bedford Row, London, W. C. 1, England.

Break Winter's Grip with Cletrac



Power Traction and Speed make CLETRAC the Supreme Outfit for Snow Clearing!

Pushing a trail through heavy drifts

Almost buried yet Cletrac opened up this drift

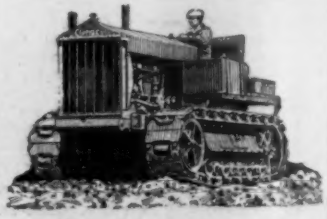
WHEN blizzards and drifts choke up the highways and threaten isolation, ACTION IS NEEDED! There is no time for slow, costly and seldom successful experiment. Exhaustive tests have proved and the testimony of users confirms, that the powerful, flexible, sure-footed CLETRAC is the *one* tractor that can be *dependably* entrusted to meet *every* situation.

CLETRAC is "the crawler tractor of advanced design." Combined with its remarkable power, speed and sure traction you will find rugged construction, unusual accessibility, easy handling, "One-Shot" oiling and utmost economy.

Whether for road construction, maintenance, earth-moving, snow-clearing or any other industrial operation, your choice of a CLETRAC for the job will insure speedier work, less costly performance and a wider range of operation. The purchase of a CLETRAC is a sound investment in year 'round traction power.

CLETRAC is built in a complete range of models to meet every snow-fighting and industrial requirement. Write today for full particulars of the CLETRAC 20, the 30 or the super-powered 100.

The Cleveland Tractor Co.
Cleveland, Ohio



The Cletrac 100

Here is the 100 h.p. unit that tops all former tractor engineering achievements! This supertractor knows no equal in power or performance and is built to fully meet every peak load requirement of modern road work, snow removal and heavy industrial operation. It will pay you to investigate.

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Higher-Speed and Lighter-Weight Diesel Engines

There has been an increasing demand in the municipal field for simple, compact diesel engine units that could be installed in present plants without increasing the size of the plant building and which would be as simple to install as the gasoline engine. In many of the smaller cities there is also need for small units to carry the all-night street-lighting load. One of the new developments to meet this demand is a line of higher-speed, lighter-weight diesel engines in ratings from 30 to 180 hp. now built by Fairbanks, Morse & Co., of Chicago.

The smaller sizes of diesel engines have demonstrated that they will produce a horsepower-hour with a fuel and lubricating oil cost of approximately one-half cent, or a kilowatt-hour for approximately three-quarters of a cent. With labor and other charges added, the total power cost seldom is more than 1½ cents per kilowatt-hour.

The simplicity of the new diesel has a distinct appeal to city owners. In this engine the fuel oil is injected into the combustion space above the cylinder proper by means of a plunger pump which is driven by a cam mounted on a shaft running along the side of the engine about halfway up. This shaft is driven by means of gears from the main crankshaft. One of these plunger pumps is required for each cylinder. The fuel is sprayed through a nozzle located at the top of the cylinder, and the injection of the fuel is timed so that it enters the combustion chamber at about the time the piston reaches the top of its stroke.

By igniting the charge of fuel oil by the heat of compression, the pressure of the air at the top of the cylinder when the piston is in its highest position is about 500 pounds per square inch. When the air is suddenly compressed to 500 pounds, the temperature rises to approximately 1,000 degrees Fahrenheit, the fuel is ignited, and the burning gases expand out into the cylinder, driving the piston down, the action being more like that of steam in a steam engine, since the combustion is not explosive, but is, on the other hand, slow.

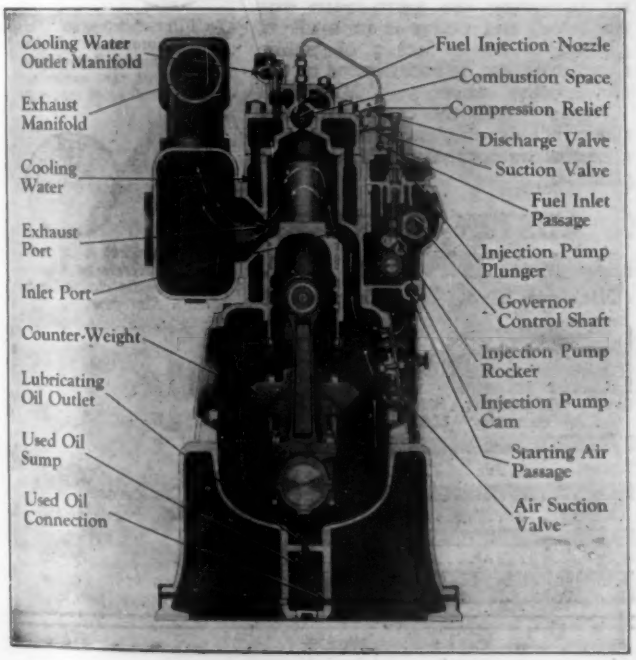
Low fuel cost is another thing that appeals to city officials. The high-compression type of diesel will burn very low grades of fuel and will burn them more efficiently than the lower compression or semi-diesel types.

The engines of Fairbanks, Morse & Co. are built in a number of modifications to meet practically every service requirement of city use. Since the speed of units of this type matches up with many types of driven machinery such as centrifugal or screw pumps, it is also possible to direct-connect this type of engine to the driven machinery. Another modification is the direct connection of a small alternating-current generator with direct-connected exciter. This is the first time that a full diesel engine alternating-current generating set has been available in sizes as small as 17 kilowatt.

When direct current is desired, these engines are equipped with a ball-bearing direct-current generator, and the resulting unit is very compact.

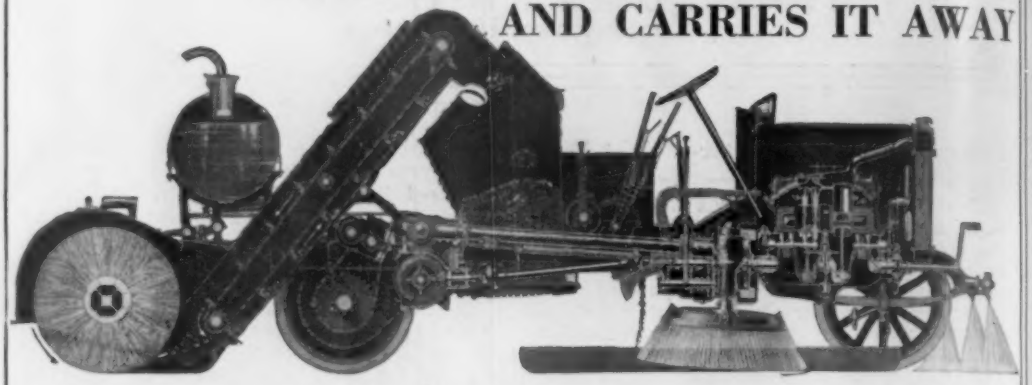
The new diesel is equipped with both manual and governor control. In this control a half-turn of the small regulator will vary the speed through a wide range. Where the engine is to be operated for long periods at a slow speed, the governor control wheel is turned and the engine operates at this slow speed under governor control.

The engines are started with compressed air at a pressure of about 250 pounds, which is supplied by a small air-compressor and stored in small tanks.



CROSS-SECTION OF 15-HORSEPOWER DIESEL ENGINE OPERATING AT 800 R.P.M.

IT SPRAYS THE STREET
AS IT SWEEPS THE STREET
AS IT PICKS UP THE DIRT
AND CARRIES IT AWAY



IN PRACTICALLY EVERY STATE—

and in hundreds of cities

there are one or more Austin Motor Pick-Up Sweepers in operation.

As a factor in civic betterment, it has few equals. It sweeps the street clean from gutter to gutter. As a factor of efficient and economic administration, it is unsurpassed. It does the work quicker and at less cost. As an aid to traffic—it clears away debris, mud and tire-destroying impediments.

As a factor of health—it sweeps without dust, removing the germ-laden dirt from the street and doing it in a clean, thorough way. As a factor of public welfare and progress, it contributes to the prosperity of the citizenry. "Municipal Street Cleaning" tells the complete story of this remarkable efficient machine and the low cost of its operation. Mailed free on request.

In Duluth, Minnesota. In this growing metropolis streets are swept clean by up-to-date methods.

In Ithaca, New York. A factor of this city's better health and tourist attraction is cleaner streets. The work is done at low cost by modern motorized equipment.

In Santa Barbara, California. Streets are swept clean by day or night, without dust, by Austin Sweepers. The cost is most reasonable.

In Waco, Texas. There are 3 Austin Sweepers keeping Waco's major thoroughfares clean for traffic. No dust—the dirt is sprayed.

In Flint, Michigan. This city maintains an efficient street cleaning department. Equipment is motorized and work done at moderate cost.

In Milwaukee, Wisconsin. Narrow streets or wide—all are easily cleaned with Austin Sweepers.

THE AUSTIN-WESTERN ROAD MACHINERY CO.

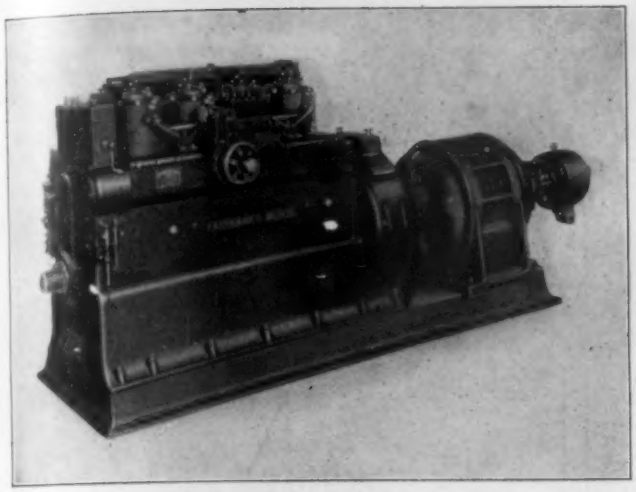
400 N. Michigan Blvd. Chicago, Ill.

Send "Municipal Street Cleaning" today. **FREE**

Name .....

Address .....

City ..... State



A 35-KW. ALTERNATING-CURRENT DIESEL ENGINE GENERATING SET WITH DIRECT-CONNECTED EXCITER

Davey to Treat New York City Trees

The services of James A. G. Davey, Vice-President of the Davey Tree Expert Co., Kent, Ohio, have been accepted by Park Commissioner Walter R. Herrick as supervising expert in connection with the treatment of the trees in Central Park, New York City. Mr. Davey, who is a resident of New York, will serve without compensation.

A demonstration made by Mr. Davey some time ago was deemed sufficient proof of what can be done. He saved ninety of one hundred dying trees in Central Park by feeding and watering them properly and pruning them scientifically. He also proved by exhaustive tests that noxious gases from chimneys and automobiles are not of sufficient density to harm the trees. The whole trouble was that the trees were not being given what they needed.

One of the great immediate problems in Central Park is to control the red spider which has infested so many of the park trees. This pest, so small that it can be identified only through the microscope, sucks the vital parts of the leaves, and unless the ravages are checked the tree is finally defoliated. From thirty to forty congregate on one leaf and it is evident that there are not only millions, but billions, of them on the trees of the park. They are being attacked with poisonous sprays and in time it is expected that their depredations will be stopped.

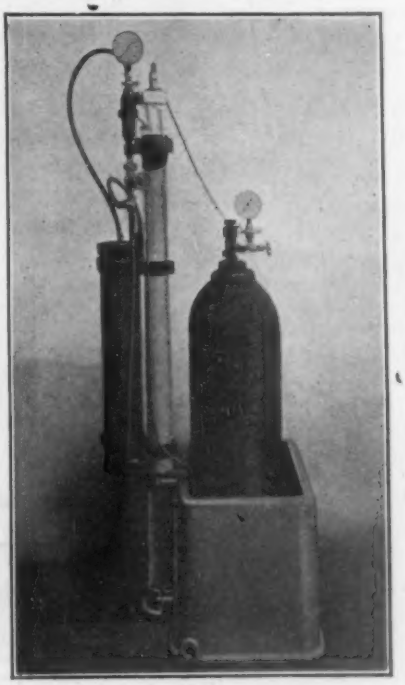
New Constant-Temperature Chlorinator

A new thermo type solution feed chlorinator has been developed by the Paradon Manufacturing Co., Arlington, N. J. This chlorinator uses a standard 100-pound chlorine cylinder which is placed in a water bath. Inasmuch as the temperature of water varies but little from day to day, this bath keeps the cylinder at an approximately constant temperature and pressure. The usual chlorine pressure-reducing and constant-pressure devices are eliminated.

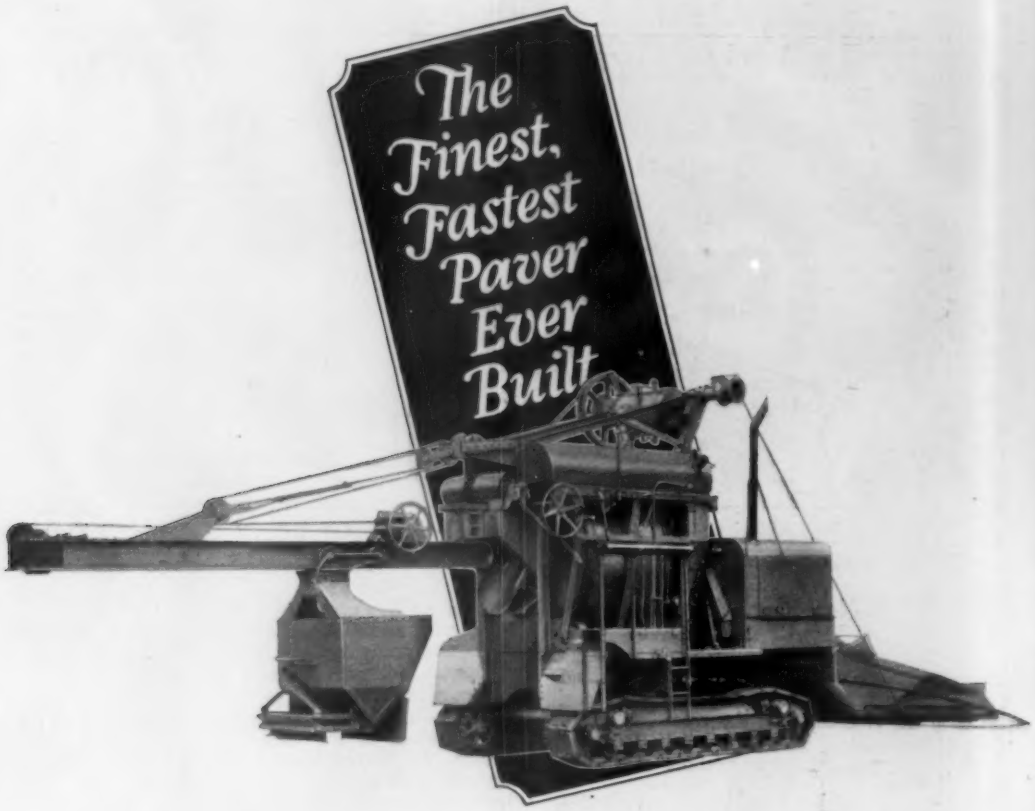
The chlorine passes from the cylinder through a control valve and then into a glass bubbling type volumetric meter from which a chlorine and water solution is drawn into an injector which is used to apply chlorine to the water or sewage to be chlorinated. Part of the auxiliary water-supply operating the injector is used to keep a small amount of water circulating in the water bath. The bubbling meter is enclosed in a glass cylinder which fills with water just as soon as the injector is in operation because of the vacuum created by the injector. This water acts as a medium to make visible bubbles of gas released from the meter. As soon as the injector ceases to operate, the vacuum inside of the glass cylinder is released and the water-level drops to the level of the overflow of the water bath, unsealing the bottom of the glass cylinder. The apparatus is mounted on a vitrified enamel pedestal.

The thermo type TS chlorinator is applicable for treating small water-supplies and the effluent of small sewage plants, and also for treating swimming pools.

The Paradon Manufacturing Co., Arlington, N. J., has announced the appointment of Paul M. Nickerson, formerly on sales and service work for the main office, as sales representative for the New England States, and the state of New York, with the exception of the vicinity of New York City. Thomas M. Zimmerman, formerly with the State Highway Commission of Pennsylvania, will take charge of sales and service work for the Paradon chlorinator in the states of New Jersey, eastern Pennsylvania, Delaware and Maryland.



THE PARADON THERMO SIPHON CHLORINATOR



"Goodbye Yesterday—Hello Tomorrow"

Heat-Treated Blades, Buckets, Chute

defeat the abrasive wear of mixing—and preserve Rex speed throughout the season.

8-Second Discharge

provides original Rex high-speed action in the Rex 70 second cycle.

Governor Booster

speeds up the engine and the drum when the skip starts up—charging and discharging are faster.

6-Cylinder Engine

smothers the vibration common to many mixers—or you can get the Waukesha 4-cylinder job.

FOR 1927, Rex has built a *New* and *Even Greater* 27-E—a paver that takes one more long step away from "yesterday"—towards "tomorrow." This New Rex is built on the idea that a paving mixer should be real machinery. And it is built to give the contractor even more yards per day—for even more seasons. On these two points—and the lower-yard-costs that they produce—the New Rex holds an inviting story for you. Check the side columns for a few of the reasons why. And check the *1927 Rex Paver Catalogue* for the rest. If you're interested in new and better paver performance—send for your copy today.

Timken Bearings

in the speed reduction, drum rollers and other bearings reduce friction and upkeep.

7-Second Water

stops mixing penalties and water hold-ups—and it's accurate to the pound.

Unit Power Plant

incorporates engine and speed reduction into one compact high-speed unit.

Unified Action

can add 40 minutes to the paving day by handling charging and discharging at one time.

CHAIN BELT COMPANY, 767 Park Street, Milwaukee

REX PAVERS

(Reg. U. S. Pat. Off.)

Mention THE AMERICAN CITY—it helps.

THE PORTABLE H-H INHALATOR IN USE FOR RESUSCITATING A VICTIM OF ASPHYXIATION

A First Aid and Resuscitation Device

A resuscitation device that actually breathes life into victims of suspended respiration from gas asphyxiation and many other causes, is being manufactured by the Mine Safety Appliances Co., Braddock Avenue and Thomas Boulevard, Pittsburgh, Pa. It is the H-H inhalator for administering Carbogen (95 per cent of oxygen and 5 per cent of carbon dioxide) to victims of asphyxia from carbon monoxide, gas, smoke, petroleum vapors, collapse, etc.

Carbogen, the trade name of the correct mixture of oxygen and carbon dioxide to produce normal stimulation and the maximum absorption of oxygen, eliminates poisonous gas from the blood by causing full ventilation of the lungs. In this inhalator, two cylinders filled with Carbogen, 5 per cent CO_2 in oxygen, each holding 16 cubic feet at 135 atmospheres, are coupled to a manifold in which a high-pressure gage is inserted. By operating the closing valve of the cylinder, Carbogen flows to the high-pressure reducing valve and then through a measuring dial marked in liters to indicate the rate of flow, thence into a rubberized cloth reservoir, whence it flows to the patient through a rubber hose and fitted face mask with celluloid hood, pneumatic face pad and head harness. As one cylinder becomes exhausted, the supply from the reserve cylinder may be obtained by simply opening its valve. If both cylinders become exhausted, the measuring valve is operated to take air from the outside without interruption of treatment.

Cylinders may be refilled by sending them to the manufacturers, or at fire or rescue stations, by means of a high-pressure oxygen pump if available, or by equalization of pressures using carbon dioxide and oxygen from commercial cylinders.

The inhalator was developed by Drs. Yandell Henderson and Howard W. Haggard of Yale University and tested and officially approved by the American Gas Association and the Association of Police and Fire Surgeons. It is being used successfully today for resuscitation purposes by gas companies, iron and steel companies, police departments, fire departments, bathing beaches, etc.

Dorr Company Expands Service Facilities

For the purpose of giving its customers specialized assistance in connection with the installation and initial operation of its equipment, the Dorr Co., 247 Park Avenue, New York, has established a service department which will be in charge of H. A. Linch. Mr. Linch, who has been associated with the Dorr Co. for eight years, has had a wide and varied experience in chemical, metallurgical and industrial operations, not only in this country, but also in South America and Europe. He will be assisted in this work by a staff made up of men who have had many years of field experience with all types of Dorr equipment and who are especially qualified to give the users of this equipment high-grade service.

Manufactured Dew for Lawns and Parks

The underground frostproof lawn, garden and park sprinkling system, developed by Brooks, 14528 Second Boulevard, Detroit, Mich., is becoming popular with city officials for keeping city parks and show places in beautiful, healthy condition. In this system, soil is analyzed, sod is lifted, and pipes carefully buried six inches underground. Along these pipes, sprayers are uniformly located to throw an even mist on the surrounding ground.

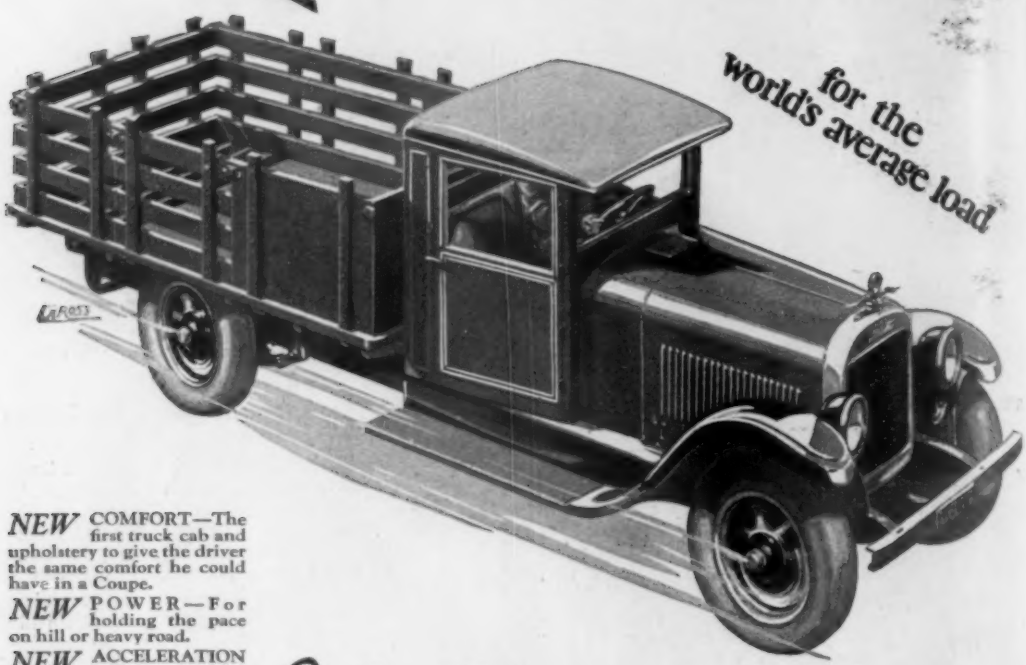
The type of ground to be irrigated decides the kind of sprays used and the level at which they are set. Gravity drops a metal cap over them when they are inactive, and mowers can close shave the grass above them without damage. While watering the park or lawn, this system also irrigates trees, roots and shrubbery. When the water is shut off, the remaining water in the pipes flows into deeper drainage pipes to the sub-roots of the trees, irrigating them where they need it most.

The entire system is controlled by an automatic valve regulated by an electric clock, thus eliminating labor. The water is turned on and shut off at any hour of the day or night regularly, with no attention needed, although the system may be installed with hand control, if desired.

A gentle, evenly distributed mist falls on each square inch of ground, there are no muddy puddles, and the shoots of grass and foliage are not injured with a heavy stream. By regular watering, the grass and plants receive a regular supply of oxygenized organic iron, which will increase color and growth.

By using the automatic control that gives measured water, water is saved. According to the manufacturers, users of this system report a 50 per cent decrease in their water bills. The system can be used at night when pressure is highest, and will operate on low-pressure city water systems. In California and Florida it is used as an effective guard against frost in the orange groves.

The *new* Speed Wagon



NEW COMFORT—The first truck cab and upholstery to give the driver the same comfort he could have in a Coupe.

NEW POWER—For holding the pace on hill or heavy road.

NEW ACCELERATION—To make the truck hold its own in passenger car traffic.

NEW SPEED—For shortening miles on the straightaway, for beating schedules in city traffic.

NEW EASE OF HANDLING—Easy to stop with 4-wheel, internal-expanding brakes. Easy to steer with modern adjustable bevel pinion and sector steering gear. Easy to shift—oversize single plate clutch.

NEW COMPLETENESS—Myers Magazine Oilers for automatic chassis lubrication, crank-case ventilation, electric starter. Tilt-Ray headlights with switch on steering column, extra accessible tire carrier at rear under frame, speedometer, electric horn, etc., etc.

MORE And even more of the ruggedness and durability which have saved thousands of dollars for former Speed Wagon owners.

REO MOTOR CAR CO.
Lansing, Michigan

for faster, surer, easier, cheaper hauling

4 Wheel Brakes Coupe Cab – 6 Cylinder Engines

SPEED WAGON

Do you mention THE AMERICAN CITY when writing? Please do.

A New Type of Highway Guard-Railing

County officials and highway engineers will be interested in the new type of mechanical highway guard-rail that has been developed by Joseph H. Ramsey, Albany, N. Y., in collaboration with District No. 1 of the New York State Department of Highways, for the protection of dangerous locations such as usually occur at abrupt turns, steep embankments, bridge approaches, etc.

This new rail is designed to take the place of the old heavy wooden fences and the reinforced concrete posts. It is built around the principle that resilient mechanical means shall be embodied within the cable supports to cushion and absorb the forces of impact resulting from a colliding motor car, and that the materials used shall be capable of withstanding terrific strains and blows.

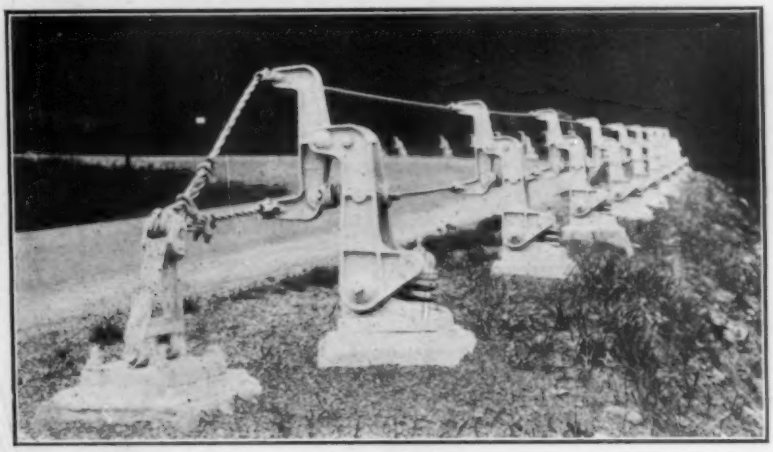
The guard-rail supports are of malleable iron and comprise bases upon which are pivotally mounted on cupped bearings pairs of vertical struts or side plates. These struts support at their upper ends equalizers pivotally mounted on cupped bearings between them. The equalizers are maintained in their normal positions, shown by pairs of compression springs located between the vertical struts. The struts are wider apart at the bottom to effect proper side-bracing and are maintained in their normally vertical positions shown against the action of heavy compression springs at the rear of the bases.

Upon the facing portion of the equalizers are two brackets projecting toward the highway, upon the ends of which the cables are freely suspended by U-shaped stirrups. By holding the cables away from the faces of the equalizers, the cables present a smooth, resilient and uninterrupted surface, for keeping the motor car within the limits of the highway, and projecting parts such as fenders, hub-caps, running-boards, etc., cannot come into contact with any portion of the cable supports. The ends of the cables are passed around sheaves in malleable iron brackets, which are hinged to base castings upon concrete foundations.

The malleable iron castings with their cupped bearings and cushioning springs comprise a support for the cables of maximum resilience and strength, and this is mounted upon a concrete pier or foundation 14 inches square by 42 inches in length, to which it is secured by two ⅞-inch diameter anchor bolts cast integral with the pier. The cable supports, anchors, cables and exposed ends of the piers are painted white to afford maximum visibility.

When an automobile collides with the guard-rail, the equalizers at first automatically adjust themselves to distribute the impact equally upon the two cables, thus engaging the maximum supporting surface upon the car. When the "crash" occurs, the forces of impact are guided through the equalizers to the vertical struts with their cupped bearings, downward into the compression springs in the bases, and thence through the piers to the earth. By so directing and cushioning the forces of impact, the damage to the automobile, its occupants and the guard-rail is reduced to a minimum.

The piers may be precast or poured in place, in which event an extensible steel form may be used. Owing to the great strength of the supports and piers compared with that of any other type, they may be installed on 16-foot centers, thus keeping the cost per lineal foot of guard-railing very close to that of the older forms.



RAMSEY GUARD-RAILING, SHOWING METHOD OF LESSENING DAMAGE TO VEHICLES STRIKING IT

Fair Represents Haiss in Great Lakes States

The George Haiss Manufacturing Co., Inc., 143rd Street and Rider Avenue, New York, has announced that D. H. Fair has been appointed District Representative in the Great Lakes States, making his headquarters in Chicago, Ill.

The Elgin Corporation

On September 1 the organization which has long been known to city officials as the Elgin Sales Corporation changed its firm name to the Elgin Corporation. For some time the corporation has been commonly referred to by its customers and other friends under its new name and to conform with this practice the officers decided on the change.

The personnel of the Elgin organization has not been affected by the change in its corporate title. George C. Dodge is President as before, and A. M. Anderson is Secretary-Treasurer. The Elgin Corporation has offices at 501 Fifth Avenue, New York, and 10 South La Salle Street, Chicago. From these two addresses is carried on its business with the Elgin motor pick-up sweeper and the Auto-Eductor for cleaning sewer catch-basins.

International Trucks

Owned by Hundreds of Municipalities

THE illustration shows the entrance to the Long Island City International branch, and one of the armored trucks owned by the Department of Finance. The City of New York has a great fleet of Internationals at work in eighteen departments of the different Boroughs.

The International truck line includes the ¾-ton "Special Delivery"; 4 and 6-cylinder Speed Truck, 1¼, 1½, and 2-ton; and Heavy Duty Trucks, double reduction drive, 2½ to 5-ton; also chain drive trucks for 3, 4 and 5-yard dump bodies.

We will be glad to send a catalog, or a folder on any of the sizes named above, to any address.

International Harvester Company
of America
606 S. Michigan Ave. Chicago, Ill.
(Incorporated)

Do you mention THE AMERICAN CITY when writing? Please do.

GRAVEL ROAD SIX MILES SOUTH OF ALPENA, MICH., TREATED WITH DOWFLAKE CALCIUM CHLORIDE

Watering Roads by Air

Watering Michigan roads by air is the latest development of the State Highway Department in safety and permanency of gravel road construction. Aerial water wagons is not the answer. Calcium chloride does the trick, for it has the property of absorbing moisture from the air and so dustproofs and is a supplementary binder for gravel roads. The Dow Chemical Co., Midland, Mich., developed the use of calcium chloride as a dustproofing material for the top dressing of gravel roads. The Michigan State Highway Department took it from this point and developed the use of calcium chloride in an altogether new method of road engineering.

A. L. Burridge, Division Engineer, Michigan State Highway Department, experimented for two years before actual building of improved roads was begun. The method worked out by Mr. Dillman calls for the use of finely screened gravel for the body and top finish of these roads. To this is added from 6 to 12 per cent of finely ground clay, depending upon the texture of the subsoil. About six tons of calcium chloride per road-mile is mixed in, and the road is rolled and packed ready for traffic. The moisture which the calcium chloride absorbs from the air keeps the clay moist and plastic and binds the entire roadbed and surface into a compact, elastic mass which stands up under ordinary traffic.

During the first eight months of 1927, the state used 18,000 tons of calcium chloride for approximately 3,000 miles of state-owned gravel roads. Probably an equal amount has been used on various county roads where the state method of gravel road construction is used.

As all oversized pieces of gravel have been removed from the road surface, the factor of safety for the motorist has been increased. The large stones formerly acted as roller bearings under the wheels, and crashes were not unusual. The dustproofing of the surface has added to the safety of driving over these roads.

Steel Extension Wheels for Rubber Tires

For highway maintenance work in the early spring or later during wet seasons, where extremely heavy drawbar pulls are encountered and where soil and other conditions are severe and added traction facilities are needed, French & Hecht, Davenport, Iowa, and Springfield, Ohio, are now building steel extension drive wheels with cleats that extend partly over the rubber tire on the outside and protrude in the opposite direction from the outer edge of the wheel rim. These wheels are especially adaptable for heavy pulls in cases where ditches are cleaned and made, and where extreme grading work is to be done at the side of the road. They are now being built in all the various sizes required for rubber-tired wheels and will fit any wheel tractor used for industrial purposes.

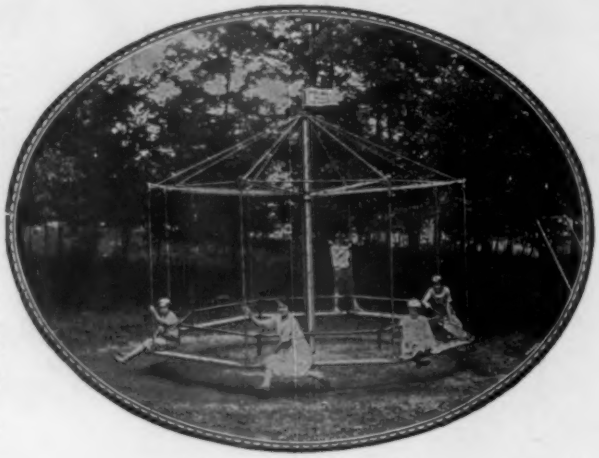
As applied to the McCormick-Deering 15-30 tractor, the diameter of the extension wheels is the same as the outer diameter of the 50-inch rubber tires. The extension wheels are attached to the main wheels in the same way as rubber-tired extension wheels, by having lugs through which bolts pass to hold the rims rigidly together and having the hubs machined so that one fits into the other, both hubs being held together by machine bolts. Thus the main wheel and the extension wheel are one unyielding solid unit.

The cleats are made of angle-irons having the corners extending outward and are bolted to the extension wheels by three large bolts. These cleats are placed on the extension wheels in the conventional manner and extend partly over the rubber tire. An advantage of this particular design is that the full benefit of the rubber tire is maintained, making for easy riding on the part of the operator and at the same time giving the lugs contact with the ground. Penetration is thereby obtained and positive traction assured.

Steering bands for the front wheels are another development that is especially advantageous in cases where heavy duty is required on tractors and where soil conditions are such that there is a ten-

MORE FOR YOUR MONEY

Than you ever thought possible



Mitchell Merry Whirl

Already the Merry Whirl is scoring the greatest success in our Playground History! And why! Because no other Playground Device of equally low price ever supplied so completely all the amusement and exercise afforded in the Merry Whirl.

REMEMBER
The Merry Whirl

—will accommodate over 50 children at one time
—is the safest Playground Device on the market
—does not need supervision
—is an all-year apparatus
—and guaranteed to give satisfaction

Send for the Mitchell "Betterbilt" Catalog today. As you turn its pages, note from the illustrations how strongly and sturdily Mitchell Equipment is built and assembled. Consider our low price and uniformly good design and construction. You will be convinced that it represents an incomparable value involving real economy.

MITCHELL MANUFACTURING CO.

1301-29th Ave. — **Milwaukee, Wis.**

BRANCHES

St. Paul — **Cleveland** — **Wichita**

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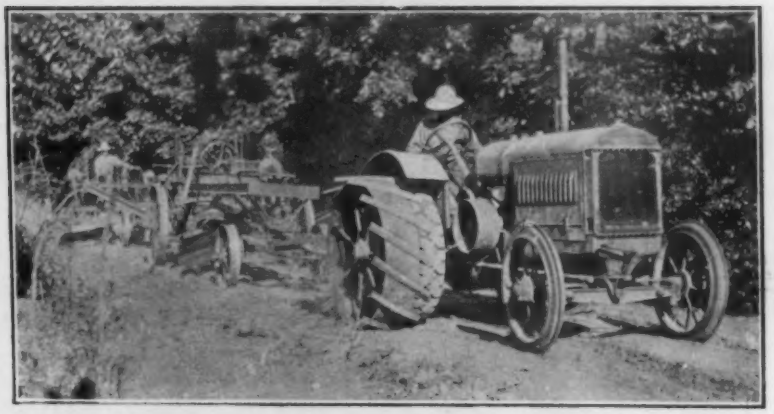

A McCORMICK-DEERING RUBBER-TIRED 15-30 TRACTOR IN ILLINOIS, EQUIPPED WITH STEEL EXTENSION WHEELS, PULLING TWO GRADERS

dency for the tractors to slip sideways under heavy pulls. These bands are very useful on the front wheels of one-man maintainers mounted directly on the tractors. In such cases there is considerable side strain due to the angle of the blade, and the steering bands hold the tractors in place on the road. Added traction is gained by the tractor, because of the fact that the tractor is held in a straight position as it goes forward, and not diagonally as when the wheels slip off to one side.

A New Oil-Burning Kettle for Road Construction Work

A new oil-burning asphalt-melting kettle, Type 83, for road construction work, has been developed by Littleford Bros., Cincinnati, Ohio. It is made in two capacities, 300 and 550 gallons, and embodies practically all the features of the wood-burning kettle which this company has been manufacturing for years, except that it is built for burning kerosene or a light furnace oil exclusively.

Heat is supplied by two oil burners, of Littleford manufacture, which it is claimed will melt batches of asphalt in a much shorter time than is possible with a wood or coal fire.

The kettle carries a fuel tank of 20 gallons capacity, and is mounted on roller-bearing wheels and high-carbon steel axles. While standard equipment includes all-steel wheels, the kettle is mounted on solid rubber tires with steel heat-guards, when desired.

A warming-hood to take the place of the standard cover, and a barrel hoist for raising barreled materials, are accessories which can be furnished.

THE NEW LITTLEFORD TYPE 83 OIL-BURNING ASPHALT MELTING KETTLE

Motor-Bus Consultant Changes Address

Announcement is made of the change of address of Walter Jackson, fare and motor-bus consultant, from 143 Crary Avenue to 160 Gramatan Avenue, Mt. Vernon, N. Y.

The Burch Corporation

The name of the Burch Plow Works Co., Crestline, Ohio, has been changed to the Burch Corporation. According to C. R. Beaver, Sales Manager, this change of name does not in any way change the policy or personnel of the organization, which manufactures Burch unloaders and stone spreaders.

The Codification of Municipal Ordinances

Earle Gill and Logan D. Fitch have announced the organization of the firm of Gill and Fitch to engage in the practice of municipal law to undertake the codification of municipal ordinances and to act as consulting counsel to municipal corporations. The offices of this partnership will be at 412 West Main Street, Madison, Wis.

A New 6-Yard Tractor Truck for Municipal Road Work and Snow Removal

A heavy-duty tractor truck, built for the most severe snow-plow work and heavy hauling, has been built by the Lombard Tractor & Truck Corporation, 342 Madison Avenue, New York. It has an especially rugged composite body of wood and steel construction, which is standard equipment. Municipalities can use these machines to good advantage, as they can be furnished equipped with smooth crawler treads which will not injure the finest pavement or roads, for municipal road work, grading, hauling, etc., in the summer months, and in the winter months treads with cleats can be used for snow-plow work, thereby effecting a great saving in the cost of plowing snow. The machine will plow out roads to a width of 18 to 20 feet once over on snow up to 3 and 4 feet in depth, and in any fresh snow up to 2 and 3 feet in depth it will plow out a road of this width once over at a speed of about 7½ miles per hour. Practically any type of plow can be attached and used with this machine.

The floor of the dump body is a ¼-inch steel plate over a 2-inch hardwood floor. The cross-

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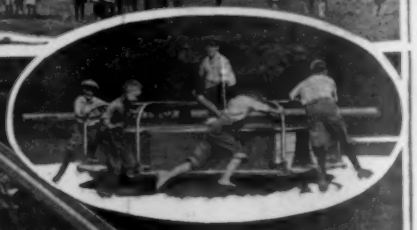
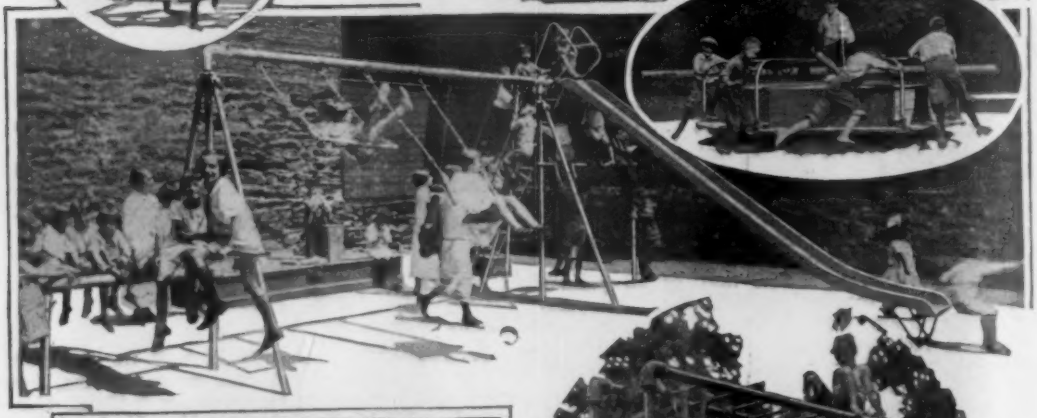




Write for complete Catalog

The Everwear Manufacturing Co.
Springfield, Ohio

bolsters are nine heavy 4-inch I beams and one 3- x 2-inch angle. The longitudinal sills are four angles 4 x 3 inches x ½-inch full length under the cross-sills. The side sills and runboards are all steel, oak fitted. The rear posts are all steel, hickory fitted, and the side braces are twelve structural steel braces supporting steel-bound side posts with underbody braces. The weight of the dump body is 4,800 pounds, including the side boards.

This tractor truck is mounted and carried on Timken roller bearings, thereby functioning easily and consuming a minimum of power. In the crawler tread over which the load is carried there are twelve of these large bearings on each side of the machine, so encased as to be dust- and water-proof, thus insuring long life to the bearings and resulting in low upkeep cost.

The length inside the dump body is 12 feet and the width is 6 feet. The height of the permanent sides is 18½ inches. The side boards are 9 inches high. The width over-all is 87¾ inches, and the height of the front is 30 inches. The capacity without the side boards is 4.11 cubic yards, and with the side boards is 6.11 cubic yards, on water-level basis. An angle of 40 degrees insures quick unloading, and the load can be dumped and the body returned to normal in one minute.

The truck is equipped with a heavy-duty, single-cylinder hydraulic hoist, with a 6-inch ground bore cylinder with a 42½-inch piston travel. Its lifting capacity is 15 tons, and it has oversize cables, cross-arms and base. The weight of the hoist is 700 pounds.

This tractor truck is a 6-yard model with an 88- to 97- horsepower Climax R4U 4-cylinder 4-cycle type motor. The main tank and Stewart vacuum tank hold 60 gallons of gasoline, and the cooling system has a gear-driven centrifugal pump. It is equipped with heavy-duty, dental-type, fully-enclosed transmission, with three speeds forward and one in reverse. Alemite pressure grease lubrication is used except in motor, transmission and rear-end drive. The cab is completely enclosed, with a two-part door.

A Bituminous Pavement Sampling Set

In order that engineers may be able to analyze bituminous pavement which has been laid, the Riehle Bros. Testing Machine Co., Philadelphia, Pa., has developed the Riehle-Howe bituminous paving sampling set. With this set sample cores may be taken from the finished bituminous pavement to determine the thickness of the courses, to check the degree of rolling by density and void determinations, and to check the bonding of courses and joints, as well as to determine by analysis the character and grading of the mixture and materials used in the pavement. This method is also useful in cutting and removing the bituminous material before sampling or drilling the concrete base. Another important use is for the insertion of permanent traffic markers in bituminous pavements.

To take a sample from the pavement, the proper size of die is selected to give a sufficiently large sample for analysis if the material is to be analyzed. Ordinarily, for sheet asphalt or stone-filled sheet asphalt, commonly known as modified Topeka mixture, or when simply the depth of the bituminous surface is desired, a die of 2 inches inside diameter may be used. For asphaltic concrete of the coarse aggregate type or Warrenite Bitulithic pavement mixtures to be sampled for density determination

THE NEW RIEHLE-HOWE ASPHALT PAVEMENT SAMPLING SET

or analysis, a die of 2¾ inches inside diameter should be used. The required weight of the roller, truck or auto used to jack against, depends upon the size of the die used and the temperature of the pavement at the time the sample is taken, as well as the character of the mixture.

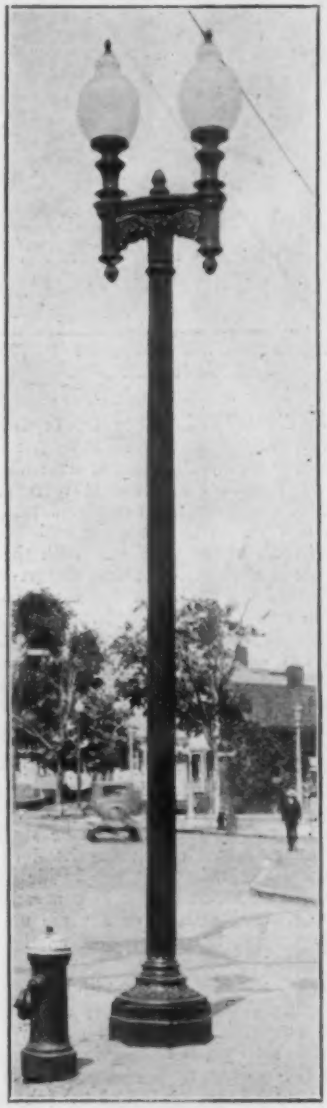
The die is placed on the pavement with the jack on top. The die is slowly jacked into the pavement against the axle of the roller or the center of the front axle of a truck, placing hardwood blocks on top of the jack if the clearance is too great or running the front wheels of the truck upon blocks placed on the pavement when the normal clearance is too small. The total rise of the jack is 5¼ inches. The jack is rated at 2 tons and is tested to this load previous to shipment.

The pressure is released on the jack just as soon as it is felt that the die has reached the concrete base, to avoid turning the edge of the die. The cutting edge of the die should always be straightened if bent, on an anvil or on the head of the jack, before using again, keeping the inside of the die of uniform diameter, so as not to compress the pavement sample. The outside of the die may be reground, if necessary, keeping the original shape of the cutting edge.

When the jack is removed the small jacking rod is inserted in two holes in the top of the die and the die twisted out of the pavement. The jack is depressed and the grip arms turned to the vertical position. The die containing the sample with the cutting edge down is placed on top of the jack with the arms gripping the top edge of the die. The sample is then jacked out of the die, holding the grips in place on the die.

Following this, the depth and location of the hole are recorded and the hole painted with asphalt paint supplied with the set. Then a premolded slug of the proper length is jacked into the pavement until it is level with the top of the pavement. The top surface is then painted and sprinkled with a little limestone dust or cement to absorb the excess asphalt cement. Where available, the sample holes can be tamped full of hot pavement mixture instead of using the plug. The pavement sample core is marked with a record number to identify it.

LYNN Lights up with KING STANDARDS



King ornamental standards and General Electric Novalux lighting units were the enthusiastic choice of the progressive people of Lynn, Massachusetts, when they set out to obtain one of the country's finest street lighting system.

These beautiful sculptural columns combine the utmost in beauty and strength. Only King standards are made of FERRONITE, the super metal, nearly 50% stronger than ordinary cast iron. Ordinary impacts that would ruin inferior types of lighting standards, have no effect on King standards.

When your city is ready to discuss lighting needs, or extend present facilities, you have but to call upon the King-Graybar organization for expert advice and counsel which carries with it no obligation.

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A complete treatise on modern street lighting systems with illustrations of the most popular types in use throughout the country

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